ABSTRACT BOOK

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E-health, Gender Medicine, Personalised Medicine and Biomedical Laboratory Science

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ABSTRACT BOOK

SUMMARY PAG.

TOPICS

THE MOBILE LABORATORY UNIT (MLU): REDUCING HOSPITALIZATION AND READMISSION OF ELDERLY CITIZENS

Susanne Andresen, Zealand University Hospital Koege, Denmark

Background-Aim

The mobile laboratory project was initiated in 2015, as a shared care model between General Practitioners (GP), Zealand University Hospital and the Danish municipalities of Koege and Solroed. The purpose of the project is to prevent unnecessary hospitalization and readmission of elderly citizens.

Methods

The primary target group are chronic patients, elderly and frail patients with minor medical conditions. Upon request from the GP or hospital, a biomedical laboratory scientist (BLS) drives to the citizen's home address. The BLS meets the emergency nurse from the Municipality. On site, the nurse makes a clinical assessment of the citizens according to ABCDE stratification. The BLS performs venipuncture, and analyze the requested blood and urine tests in the MLU. The turn-around-time for results is less than 30 minutes. The nurse contacts the requestor, and provides observations from the triage together with the lab test results. Based on this information, the requestor determines, whether the patient must be hospitalized, treated at home, or if no treatment is required. The test repertoire in the mobile lab counts 40 different analyses, and includes the most common panels in field of hematology, biochemistry and blood gas testing.

Results

In the project-period, the median age of the citizens visited is 81 years. The primary cause of requests are pulmonary diseases, suspicion of infection, abdominal pain and urinary tract infection. The conclusions based on triage and test results reveal infections as the most common finding. Out of 738 patients visited; 226 citizens were hospitalized the same day, 26 after 2 days, 28 up to 7 seven days after visit, and 458 have no hospitalization.

Conclusion

The conclusion after the first 2 years is that the MLU has paved a way for close interdisciplinary and intersectorial work relations and understanding. The project has given great satisfaction among citizens and to the relatives of dementia sufferers. The capacity of the MLU is not utilized however, possibly making the running costs higher than the expenses otherwise spent on hospitalization. An evaluation report soon to be published however recommends that the project continue for further development.

QUALITY ASSESSMENT OF POC INSTRUMENTS: ORGANIZATION IN HOSPITAL WARDS AND GENERAL PRACTITIONERS (GP)

Susanne Andresen, Zealand University Hospital Koege, Denmark

Background-Aim

At Zealand University Hospital Denmark, the Department of Biochemistry manages all POC instruments. Quality assessments carried out regularly ensures that the equipment always is in proper working condition. A biomedical laboratory scientist (BLS) performs the QA. Online connection to middleware ensures daily monitoring.

Methods

The POC range at Zealand University Hospital (Koege) consist of Glucose, INR, Urine Stix, blood- gas. For each type of POC equipment, The Dept. of Biochemistry both carry out internal comparison of all instruments and participates in EQC programs.
The Dept. of Biochemistry is responsible for the initial training of nurses in hospital wards. Every ward appoints a nurse as POC-liaison. After the initial training, this person will be responsible for further training of new staff.
All users have personal logon. The POC-liaison forwards documentation for training to the Dept. of Biochemistry who manages the database, so that only trained personnel have access to the instruments.
The GP liaison (Dept. of Biochemistry) is responsible for the training of staff at the GP. Introducing new staff includes one day of training at the hospital with focus on blood sampling and pre-analytical issues. Training in using instruments takes place at the GP's office.
According to agreement between the Region and PLO (GP's organization), participating in the QA-program is mandatory. The QA is a parallel analysis for HB, Leucocytes, Leucocyte-type, Glucose, CRP and INR at the GP and Zealand University Hospital. The results are compiled in a national database, accessible for the GP.

Results

The summary for 2017 shows the following rate of responses: Glucose 88%, HB 94%, CRP 95 %, INR 96%. 93-98% of the ratios meets the accept criteria.

Conclusion

The good results from GP´s are expected and satisfactory. The daily QA procedure at the hospital ensures that all patients receive valid results.

TAKING THE LEAD IN THE WORK PLACE – ESTABLISHING ETHICAL REFLECTION FOR BIOMEDICAL LABORATORY SCIENTISTS

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At a laboratory, a basic understanding of ethics and clear ethical guidelines are important for the biomedical laboratory scientist (BLS) to feel secure in both their professional identity and workplace. Professional identity can be considered a social construction - something created through action. Professional identity is strongly linked to professional conduct and reflection of one's own professional development.

The revised International Code of Ethics for biomedical laboratory scientists was adopted at the International Federation of Biomedical Laboratory Science (IFBLS) World Congress in Nairobi in 2010. Consequently, the Swedish code of ethics for biomedical scientists was revised jointly by IBL (the Swedish Institute of Biomedical Laboratory Science) and Vårdförbundet (the Swedish Association of Health Professionals). With purpose to stimulate ethical awareness and discussion and guide reflection in the workplace, a more comprehensive ethics material for professional development of the 11,000 biomedical scientists working in Sweden was developed and disseminated.

In the laboratory the department manager has a decisive role in the basic values, where ethics should be discussed regularly in able to determine these basic values, and to maintain cohesiveness among colleagues. However, it seems there is a gap between the identification, application and resolution in everyday work in regard to ethics.

Evaluation of the use of the ethics material and the role of the leadership in establishing and supporting the every-day reflection will be presented and discussed.

IFBLS WORKSHOP: DISCUSSING ETHICAL DILEMMAS USING REFLECTION MODEL

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Anne Berndt, President Elect, IFBLS, and Advisor/Biomedical Laboratory Scientist, Vårdförbundet; The Swedish Association of Health Professionals, Stockholm, Sweden.

Introduction

The international code of ethics for Biomedical Laboratory Scientists (BLS) was adopted in 1992, and revised in 2010 by the International Federation for Biomedical Laboratory Science (IFBLS). But a code of ethics on its own and knowledge of ethical theory does not solve ethical problems: Constant work on values, ethical reflection and development of ethical awareness is required to maintain an ethically sound profession.

Workshop method

Ethical reflection models can be used as a systematic approach to ethical dilemmas. In this workshop we invite the participants to take part in practical exercises in ethical reflection. We will present a few ethical dilemmas that BLS' might meet in their daily work situation and use an adapted ethical reflection model to discuss the dilemmas.

The elements in the reflection model we use include exploration of the situation and action options, clarifying who is involved in the dilemma, disclosure of values and principles involved, determining the consequences, and then selecting action.

Our reflection model is meant to assist in the process of uncovering what a dilemma or problem consists of, evaluate alternatives and arrive at a possible solution. Our goal is that the participants at this workshop will find discussing relevant ethical dilemmas with a systematic approach challenging, but also useful and stimulating.

Conclusion

Discussing ethical dilemmas using ethical reflection models gives Biomedical Laboratory Scientists the opportunity to discuss professional ethical dilemmas in a systematic, structured manner. The practical approach of this workshop will teach the participants a method they can use to discuss own and others' dilemmas, reflect on choices and values, and develop communication skills and perceptive abilities.

IFBLS WORKSHOP: FUTURE TRENDS IN BIOMEDICAL LABORATORY SCIENCE – WHERE ARE WE HEADING AND HOW TO TAKE COMMAND?

Anne Berndt, President Elect, IFBLS, and Advisor/Biomedical Laboratory Scientist, Vårdförbundet; The Swedish Association of Health Professionals, Stockholm, Sweden.
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Introduction

Biomedical Laboratory Scientists play essential roles in a wide variety of settings, from laboratories and clinics providing health and medical care services, to pharmaceutical and academic research laboratories. IFBLS is promoting continuous professional development for Biomedical Laboratory Scientists and support a strong professional identity. Our profession requires clear career-paths, both academic and in the workplace. To ensure a good supply of new professionals for the future, the educational programs need to attract students and deliver graduates fitted for the future medical laboratories.

Workshop method

Through group discussions addressing selected topics connected to future possibilities and challenges, key considerations for future success of the profession may be identified. After a short presentation of trends influencing Biomedical Laboratory Scientists' work, i.e. role in research, challenges of leadership, task shifting and automation, the congress delegates are invited to share experiences, discuss ideas and opinions and learn from each other how to meet the future and the needs in our profession. The workshop will provide a unique opportunity to share global views.

Topics for group discussions

Biomedical Laboratory Scientist's role in:

1. Leadership in medical laboratories
2. Collaboration between Biomedical Laboratory Scientist education and the clinical world
4. Research & Development
5. Automation platforms
6. Self-tests & POCT
7. The Healthcare team

Conclusion

Our hope is to stimulate discussion and raise awareness among the practitioners of our profession to how the Biomedical Laboratory Scientist will continue to bring knowledge, competencies and skills to a wide variety of fields and to keep the dialogue going.

THE DEONTOLOGICAL CODE OF ANTEL ASSOCIATION: PRINCIPLES AND STANDARDS REGULATING BLSS IN ITALY AND A COMPARISON WITH OTHER INTERNATIONAL ORGANIZATIONS

Alessia Cabrini, National President of ANTEL, Padua Italy

Background

Since the national regulation which disciplines everyone in the sanitary profession, the so called DM745/94 for Sanitary Biomedical Laboratory Technicians, in 2010/2011 ANTel (Italian Association of Biomedical Technicians) has compiled a new version of the confederal deontological code.

Such a code is made up of rules, principles and habits in self-discipline which BLSs should adopt and follow, safeguarding citizens, the community, decour and professional dignity. It is divided into numerous articles which clearly summarize not only rules layed down by law, but also rules of good practice in the workplace, promoting efficient relationships with other proffessionals in the National Health System. Also other authorative International Organizations have established principles, standards and regulations of behaviour, to be followed by laboratory professionals in order to provide an optimal service. The aim of this presentation is to compare such deontological codes between ANTel (Italy) and other International Organizations, to highlight and enhance common objectives for possible integration.

Methods

The deontological codes of the following International Scientific Organizations have been analyzed. ASCLS (American Society for Clinical Laboratory Science), CSMLS (Canadian Society for Medical Laboratory Science), NITO (Norvegian Institute of Biomedical Science), DBIO (The Danish Association of Biomedical LaboratoryScientists), Association of Biomedical Laboratory Scientists in Finland, IBMS (Institute of Biomedical Science). Such deontological codes have been related and compared with those of ANTel (Italian Biomedical Laboratory Technician Association) in order to determine differences and similarities to outline both a national and international "common course" to follow.

Results

From the analysis and comparison of the different deontalogical codes, BLSs should be inspired by safety, discretion, proffessional development, responsability and attitude/behaviour. Furthermore for resolving particular ethical problems, it would be advisable to adopt the so called Ethical Dilemma Resolution model put forward by the CSMLS (Canadian Society for Medical Laboratory Science), which provides a structure usable for instance in an ambiguous ethical situation, as a guide for a good resolution.

Conclusion

The ethical code should be considered in connection with professional conduct, the standard professional practice and other pertinent political material on a territorial and national level. However everybody's ethical code should be considered and applied together with other codes. Since dilemmas are complex by nature, codes should be used in association rather than seperately even if this is difficult.

Furthermore continuous ethical professionality developement is advisable to help the laboratory professional to improve his/her knowledge, ability, judgement and aptitude necessary to manage or safeguard from ethical dilemmas in the workplace.

UPDATE: IDENTIFICATION OF NONTUBERCULOUS MYCOBACTERIA

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Despite reportedly low virulence of NTM for immunocompetent human hosts, an increase of their isolation frequencies has been seen in the last decade in worldwide and particularly in countries where TB incidence is on decrease. NTM are opportunistic pathogens, mostly affecting patients with preexisting pulmonary disease such as chronic obstructive pulmonary disease (COPD) or tuberculosis (TB) or those with systemic impairment of immunity. The latter group includes patients with HIV infection, those using immunosuppressive drugs, and those with leukemia. NTM can be found throughout the environment and can be isolated from soil, water (including tap water), dust, milk, and various animals and birds. Moreover, NTM resist common disinfectants.

Identification of the etiologic agent is critical to differentiate true infection from pseudoinfection, establish the clinical relevance of an NTM isolate and to management of NTM disease. Recognition of the current role of NTM isolates remains the key step in the management of NTM infections. To assist in this differentiation, the American Thoracic Society and Infectious Disease Society of America (ATS/IDSA) identifies general criteria for the diagnosis of pulmonary non-tuberculous mycobacterial infection.

These diagnostic criteria unfortunately are not universally applicable for all NTM respiratory pathogens. The NTMs deserve special attention by doctors and microbiologists: good communication between the laboratory and clinician is essential. This expansion in new NTM species is largely a consequence of newer identification methods. Since the introduction of broth culture systems for the isolation of mycobacteria, time for identification has decreased substantially. Historically, species-level identification of NTM was a long and complicated process. Growth characteristics in culture (development of color and grow rate) and substrate utilization were for decades the only methods available and sometimes no accurate identification was possible.

In the last decades new strategies have been developed using molecular techniques for identifying Mycobacterium species. The gene encoding the 16S rRNA has been for many years, and still is, the primary target of molecular identification, with several other genomic regions playing a minor role. This method remain limited to specialized laboratories.

The introduction of commercial DNA probes is the basis for the most important improvement in the identification of mycobacteria in clinical laboratories. Three different commercial systems dominate the market.

In recent years, matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) has gained a large reputation among clinical laboratories as a rapid and inexpensive tool for the identification of a number of Mycobacterium species.

Despite the more of different methodologies explored and used over the last few years, the identification of NTM is still problematic.

In the presentation there will be given examples of new technologies, molecular and nonmolecular, and clinical situations in which the information from the laboratory give strong support to decision-making for the clinician.

RECOMMENDATIONS FOR AN EFFECTIVE NETWORK FOR ACS DIAGNOSIS

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Background

ACUTE CORONARY SYNDROME (ACS) is an operational term to refer to any constellation of clinical symptoms that are compatible with acute myocardial ischemia. It encompasses Acute Myocardial Infarction (AMI), both with or without ST – segment elevation (STEMI and NSTEMI), as well as Unstable Angina (UA). Moreover, the term includes the concept of the time-dependent outcomes in the patients with acute ischemic pathology: more severe the alteration of ECG and higher the risk, quicker the intervention must be.

Since the redefinition of concept of Myocardial Infarction in 2000, the role of myocardial biomarkers, specifically cardiac troponins (cTn), became essential in the diagnosis of NSTEMI and for stratification of the risk of ACS (STEMI as well of NSTEMI).

The introduction of high sensitivity troponin (hs-cTn) analytical methods helped the utilization of accelerated diagnostic protocols (ADP) that, integrating data from ECG, and risk scores allow a rapid and safe rule in / rule out for over two/thirds in 1 hour.

Methods

It is necessary a health care organization to ensure diagnosis and treatment effectively and timely, everywhere the patient presents symptoms of suspected ACS. The answer should be the managed cardiologic networks.

Managed clinical networks are linked groups of health professionals and organizations working in a coordinated manner that is not constrained by existing organizational or professional boundaries to ensure equitable provision of high quality, clinically effective care.

The term network might suggest diffused responsibility, but these networks are not casual or informal: the point is that they are managed.

In the last 20 years (in Italy), the network model, which integrates Emergency Medical Service (EMS) with hospitals with different levels of care, progressively have represented the standard of care even more for the treatment of acute time-dependent disease.

The use and integration of Point-of-care-testing (POCT) in the laboratory networks is the key for an effective e timely diagnostic of NSTEMI.

Results

In 2017 Working Group on Myocardial Markers of Italian Society for Clinical Pathology and Laboratory Medicine (GdS MM SIPMeL) made the IV survey on the use of cardiac markers in Italy. POCT instruments dedicated to cardiac markers (usually cTn) were present in 25% of surveyed trusts, with a slight increase of 1% per year in the last 5 years, following the implementation of diagnostic networks for acute coronary syndromes (ACS).

Recommendations for cTn POCT

The integration of cTn POCT in the clinical networks for ACS patients needs some suggestions and recommendations, face of critical points about the real performance of POCT instruments, the comparability between POCT and central laboratory (LAB) methods and among different POCT methods, the local protocols for the clinical use of cTn POCT data, and the implementation and governance of the POCT diagnostics.

The more recent evaluation of cTn POCT in ACS diagnosing is the HTA (Health Tecnology Assesment) report of CADTH (Canadian Agency for Drugs and Technologies in Health.

The conclusions of CADTH report are that, given the limitations with the data and the inconsistency in diagnostic test accuracy estimates, the usefulness of POC cTn testing in settings with access to central laboratories may be limited. However, in settings with no access to a central laboratory, such as in rural health care centers or remote settings, POC cTn testing may be useful due to the potential to help reduce unnecessary transfer of patients to larger centers.
These conclusions support the use of cTn POCT in the ACS clinical networks.
According to the international guidelines, AACB (Australasian Association of Clinical Biochemists) recommends serial troponin measurements for all ED patients with suggestive ACS, but stresses that serial testing should be performed using the same troponin assay and platform. They recommend to re-baseline the troponin value for individual patients if transported to a different hospital location where a different troponin assay is used.
Moreover, AACB warns regarding the use of quantitative evaluations of POCT cTn values (delta changes): in general quantitative troponin delta change has not been determined for use with POCT assays as POCT assays are less precise at low troponin concentration.
In 2016, the Working Group on Myocardial Markers of the Italian Society for Clinical Pathology and Laboratory Medicine (GdS MM SIPMeL) reviewed and updated the Laboratory Medicine Practice Guidelines (LMPG) of American NACB (National Academy Clinical Biochemistry) proposed in 2006-2009 for implementation of cTn POCT. 15 Recommendations were defined:
For Clinical Governance, 2 Recommendations focus the conditions to consider POCT, the need of a previous global organizational review and the need of continuous monitoring of tools and outcomes of the POCT system by regular audits/feedbacks. Other 3 Recommendations pertain the implementation of a cTn POCT as a collaborative effort of actors and stakeholders with a specific responsibility of the LAB; with the key role of the multidisciplinary and multiprofessional team.
3 Recommendations discuss the characteristics of devices/instruments and the type of sample.
The recommended type of sample is whole blood and the sample should be tested immediately.
4 Recommendations refer to the characteristics of methods: it should comparable to the LAB method; should allow a TAT sampling-to-result of 1 h, optimally 30 min or less.
Other recommendation about and the information system. Moreover, cTn POCT should be controlled by IQC and EQA and supervised by LAB.

Conclusions

In conclusion timeliness is essential in diagnosis and treatment of ACS and clinical networks telemedicine is an effective answer to STEMI requirements. Myocardial Biomarkers in ACS clinical networks by POCT could help effectiveness and timeliness of intervention in NSTEMI, although some issues exist (sensitivity, comparability, quantification of cTn values) and following clinical limitations (re-baseline; not delta change; longer sampling times) for cTn POCT. Nevertheless, some useful Recommendations exist: for analytical evaluation and recommendations by HTA report of CADTH; for diagnostic performances and clinical use by AACB; and for implementation, quality and safety and monitoring of cTn POCT systems by GdS MM SIPMeL
These references could help an effective and safe use of cTn POCT in ACS clinical networks.

DIFFERENTIAL DIAGNOSIS BETWEEN THE ACUTE LYNFOBLASTIC LEUKEMIA AND INFECTIOUS MONONUCLEOSIS IN PEDIATRIC PATIENTS

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Infectious mononucleosis and acute lynfoblastic leukemia are very common diseases diagnosed in children.

Infectious mononucleosis is a clinical entity characterized by pharyngitis, cervical lymph node enlargement, fatigue and fever, which results most often from a primary Epstein–Barr virus (EBV) infection. EBV is member of the herpesvirus family; it infects at least 90% of the worldwide population.

Acute lynfoblastic leukemia is the most common cancer diagnosed in children and it represents approximately 25% of cancers diagnosed among children younger than 15 years. Presentation can be nonspecific, with a combination of constitutional symptoms (fever, weight loss, dyspnea and infections) and signs of bone marrow failure (anemia, thrombocytopenia, leucopenia). Involvement of extramedullary sites commonly occurs and can cause lymphoadenopathy, splenomegaly or hepatomegaly in 20% of patients.

The overlapping symptoms between these two diseases can lead to a difficult diagnosis. Moreover the routine laboratory tests do not allow sometimes to discriminate between these two pathological conditions.

A combined approach including morphology analysis, flow cytometry, molecular biology and immunoenzymatic assays is essential to define a proprier diagnosis.

MASS SPECTROMETRY IN THE OPERATING ROOM? HEPATOCELLULAR CARCINOMA IDENTIFICATION IN A LARGE POPULATION

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Hepatocellular carcinoma (HCC) is the third leading cause of cancer death worldwide. Despite a general decrease in overall cancer mortality rate has been observed in the last decade, liver cancer mortality increased in different Northern European countries, in the USA, Southern America countries and Australia. Even if a marked decreased has been observed in Southern Europe countries and Japan, HCC remains extremely deadly.
Together with transplantation, tumor resection is the cardinal procedure to treat HCC. Currently, the presence of cancer cells that can give rise to recurrence from tumor margins is investigated by means of immunohistochemistry (IHC) techniques that are often time consuming and subjective.
Recently Takeda et al., at University of Yamanashi, developed a cancer distinction system combining a Probe Electro Spray Ionization Mass Spectrometry (PESI-MS) technology and machine learning distinction. We tested the suitability of a specific HCC dataset built by MS spectral data of 693 samples collected from Japanese, to correctly discriminate tumor and healthy tissues of Italian patients, particularly from the region of Milan.
Tumors and the corresponding healthy tissues from 118 patients were collected after authorization of the project by competent medico-ethical committee, as excess material coming from surgical operations. Analysis were performed using a research-use-only DPiMS-2020TM (Shimadzu Corp., Kyoto, Japan) based on PESI-MS technology. Classification was based on a Support Vector Machine (SVM), which is a supervised machine learning algorithm for generic pattern identification. In this prototype instrument results are directly presented to the surgeon as Tumor Cell Percentage (TCP) with a single-button operational approach. In this application, results demonstrated that no influence from genetics, etiology or operating room guidelines affects the instrument in the classification. Despite the great majority of analysis were concordant with the pathologist decision indeed, there were limited false positive (samples defined as healthy by the pathologist but tumor by the instrument) and only three false negative. The concordance rate with an existing pathological determination was of 85.5% of results (n=266).
Since introduction of mass spectrometry into the operating room (OR) over a decade ago, a number of techniques have been developed. Despite the great potentiality and scientific evidences, these systems are still labelled “For Research Use Only”, therefore are “Not for Use in Diagnostic Procedures”. There is an urgent need to move towards more objective, more specific and accurate approaches not only in the clinical laboratory, but even in the operating rooms and the new mass spectrometry-based instrument seem to be perfect candidates for a new generation of instrumentation for diagnostic, clinical use.

ZIKA VIRUS: A CELEBRITY GLOBAL TRAVELER

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Zika virus, an infectious agent first isolated from a rhesus monkey in 1947 in Africa, has now achieved a global presence. Initially thought to be the cause of a mild febrile rash-like presentation with low mortality and morbidity, it has since been found to cause severe congenital infections in the fetus and other neurologic sequelae in adults.

Zika virus belongs within the Flavivirus genus, in the company of Dengue and West Nile viruses, and is mosquito transmitted agent. Furthermore it co-circulates with dengue and chikungunya virus in similar geographic regions, which have similar acute clinical manifestations.

The presentation will review the clinical aspects of this infection, the emerging epidemiology, and the difficulties in making a laboratory diagnosis. In addition some of the factors affecting the future spread of this agent will be presented.

REGENERATIVE MEDICINE - USE OF STEM CELLS AS THERAPEUTIC OPTIONS TO TREAT DEGENERATIVE CONDITIONS MEDIATED BY INFLAMMATION AND AGING

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Personalized medicine encompasses many different components one of which is Regenerative Medicine. Regenerative medicine is a branch of translational research in tissue engineering and molecular biology, which deals with the process of replacing, engineering or regenerating human cells, tissues or organs to restore or establish normal function. This field holds the promise of engineering damaged tissues and organs by stimulating the body's own repair mechanisms to functionally heal previously irreparable tissues or organs. Regenerative medicine also includes the possibility of growing tissues and organs in the laboratory and implanting them when the body cannot heal itself. If a regenerated organ's cells would be derived from the patient's own tissue or cells, this would potentially solve the problem of the shortage of organs available for donation, and the problem of organ transplant rejection. Many of the biomedical approaches within the field of regenerative medicine may involve the use of stem cells. Examples include the injection of stem cells or progenitor cells obtained through directed differentiation (cell therapies); the induction of regeneration by biologically active molecules administered alone or as a secretion by infused cells (immunomodulation therapy); and transplantation of *in vitro* grown organs and tissues (tissue engineering). Though use of cord blood beyond blood and immunological disorders is speculative, research has been done in other areas. Any such potential beyond blood and immunological use is limited by the fact that cord cells are hematopoietic stem cells (which can differentiate only into blood cells), and are not pluripotential stem cells, as embryonic stem cells, which can differentiate into any type of tissue, they can be induced to "dedifferentiate" as induced pluripotential stem cells. Cord blood has been studied as a treatment for diabetes. However, apart from blood disorders, the use of cord blood for other diseases is not a routine clinical modality and remains a major challenge for the stem cell community. Along with amniotic tissue, adipose tissue, chord blood, chord lining, and Wharton's jelly, have been explored as sources of mesenchymal stem cells (MSC) in order to treat conditions mediated as a function of aging and inflammation. MSC have been studied in vitro, in animal models, and in early stage clinical trials for cardiovascular diseases, as well as in osteoarthritic conditions, neurological deficits, liver diseases, immune system diseases, diabetes, lung injury, kidney injury, and leukemia. This presentation will review the use of MSCs in these clinical indications.

GENETICALLY ENGINEERED MSC FOR THE TREATMENT OF SOLID MALIGNANCIES

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In the fight against tumors, gene therapy constitutes a promising approach to eliminate cancer cells possibly sparing normal tissues. In cancer gene therapy, cytotoxic genes can be transferred directly into tumor cells by viral vector causing tumor cell death1. Despite significant advances in this field, the lack of a specific tumor tropism of viral vectors and the possible stimulation of immune cells limit the clinical potential of a direct delivery of genes into the malignant cells . The use of mesenchymal stromal/stem cells (MSC), as cellular vehicles, represents an attractive option to overcome these biological limits, supporting a targeted delivery of therapeutic protein to the tumor site2. Thanks to their biological and immunological features, including easy accessibility from different source, rapid proliferation in culture and poor immunogenicity, MSC represent a powerful weapon to develop novel strategy to fight cancer . In particular, their typical tropism for tumor sites make the MSC an optimal "trojan horse" to vehicle anticancer molecules into tumor burden .

Tumor Necrosis Factor Apoptosis Inducing Ligand (TRAIL) represents one of the most promising molecules for the development of anticancer cell-based therapy approaches. TRAIL is a potent cytotoxic protein physiologically produced by immune cells and it plays a pivotal role in immunosurveillance, inducing apoptosis in a wide variety of human cancers sparing normal tissues4.

For years our group has been involved in the generation of anti-tumor strategies based on MSC. In particular, we developed approaches where adipose derived (AD) MSC were genetically modified to express membrane bound (mb) and soluble (s) variants of TRAIL. AD-MSC armed with both TRAIL variants have shown a potent cytotoxic in vitro impact against different tumor cell lines including cervical adenocarcinoma, rhabdomyosarcoma, osteosarcoma, Ewing's Sarcoma and pancreatic adenocarcinoma5,6.

In addition, in three different xenograft models represented by cervical adenocarcinoma, Ewing's Sarcoma and pancreatic adenocarcinoma, we have demonstrated that AD-MSC TRAIL localize into tumor microenvironment counteracting cancer development both causing massive malignant cells apoptosis and exerting potent anti-angiogenic functions5,6. Collectively, these results suggest that AD-MSC are valid cellular vehicles for TRAIL and could open novel therapeutic opportunities for tumors still characterized by poor prognosis.

TELEPATHOLOGY IN LOW-RESOURCE SETTINGS: A BALANCE BETWEEN OPPORTUNITIES AND DIFFICULTIES

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Background

Telepathology can be a useful tool in underserved countries to solve problems related to the shortage of pathologists, but its effectiveness is often limited by the poor availability of well-performing Internet connections. Aim of this communication is to describe some methods developed in health cooperation projects related to pathology managed by the Italian NGO "Associazione Patologi Oltre Frontiera" (APOF, "Pathologists Beyond Borders Association") in attempt to overcome such limitations.

Methods

Since 1999, APOF deals with the development of pathology facilities in some developing countries, mainly in Sub-Saharan Africa, fostering also the institution of programs of preventive medicine, primarily cytology-based cervical cancer screening, being the incidence of this tumour particularly high in many of these countries.

Such projects provide for the training of local lab technicians for the assessment of the Pap smears to put them in condition to recognize cellular morphological changes and to directly manage negative cases. For suspect cases, the technicians select images of representative microscopic fields that are uploaded to a dedicated website and remotely diagnosed by a group of experts. Moreover, sets of whole slides of Pap smears (negative and positive cases) are regularly sent to Italy to be blindly reviewed by an expert.

Technicians are also trained for the preparation of histological and extra-vaginal cytology slides, that are instead digitized in a special scanner and remotely diagnosed by the group of experts. The way of sending and store the digitized files reflected the available resources at time of the development of the project, but in any case, it seems unavoidable to resort to a satellite connection.

The effectiveness of such training plan and of the diagnostic based on static images has been evaluated through the assessment of interobserver agreement using two different statistics (Cohen's κ and Gwet's AC1).

Results

We considered the casuistry of two different but similar projects, developed in different periods, in two rural hospitals in Zambia and Democratic Republic of Congo (RDC), respectively.

In 2006-2007, local technicians in Zambia diagnosed 1,534 Pap smears, 309 (20.2%) of which were considered abnormal and selected images were sent for the definitive diagnosis. The interobserver agreement between the technicians and the definitive diagnoses on static images (κ = 0.73, AC1 = 0.84), between the static images and the expert ((κ = 0.65, AC1 = 0.77) and between the technicians and the expert (κ = 0.77, AC1 = 0.87) were classified as "substantial".

In RDC project, in 2014-2017 were diagnoses 10,026 Pap smears, 541 (5.4%) of which were considered abnormal and corresponding images were sent. In this case, the agreement between the technicians and the static images (κ = 0.61, AC1 = 0.73) was also classified as "substantial", while the agreement between the static images and the expert was "near perfect" (κ = 0.88, AC1 = 0.91). Finally, the agreement between the technicians and the expert was "substantial" for Cohen's κ (0.69) and "near perfect" for Gwet's AC1 (0.82).

Conclusions

A low-cost and sustainable telepathology for Pap smears can be set up improving the skills of local technicians so that they can send static images through which it is possible to rend correct diagnoses. On the other hand, the necessity of high-cost connections and the shortage of pathologists make more problematic the management of histological diagnoses.

Such problem can be addressed favouring the enrolment of local doctors in specialization schools, involving in cooperation projects the few Pathology Department for a local management of histological diagnoses and promoting new techniques to better optimize the sending through the Internet of large files, as are the digitized whole slides.

CPD ON THE JOB

Martina Jürs, Biomedical Laboratory Scientist and Vice president of the Danish Association of Biomedical Laboratory Scientists

Continuous professional development (CPD) is a multifaceted concept which can be examined from very different angles. The approach depends, for example, on our perspective and assumptions concerning the nature of knowledge and adult learning. This is not a trivial matter: What we think about learning influences, where we recognise learning as well as the way we try to plan, direct or encourage it. Is learning about curricula, classrooms, textbooks and examinations? Or do we see learning as part of our everyday lives, on the job where we participate in meaningful, reflective practices? It is not an either-or question, but in this presentation, I will argue that the workplace is the primary stage of CPD. First, we learn whenever we participate and engage in actions, discussions and reflections which forms our practice. It is also important to emphasise that there are numerous possibilities to formalise learning at work. Second, new knowledge and new skills have to be shared, negotiated and absorbed in practice in order to make a real difference. The issue of transfer only accentuates the importance of cultivating a vigorous learning environment. Through examples from two Danish laboratories I will show how learning on the job is intensified and leads to competence development when biomedical laboratory scientists face new technology or take over new tasks.

PREANALYTICAL UNCERTAINTY: CAUSES AND SOLUTIONS

Giuseppe Lippi, Section of Clinical Biochemistry, University of Verona, Verona, Italy

Laboratory diagnostics develops through a closed loop, formerly defined as the "brain-to-brain turnaround time", entailing (pre-)preanalytical, analytical and (post-)postanalytical phases. It is now unquestionable that the preanalytical phase is most vulnerable to a variety of errors, which may ultimately impair reliability of test results and jeopardize patient safety. The vast majority of preanalytical errors arises from unsuitable, inappropriate or mishandled procedures during collection and handling of the specimens. Under unlucky circumstances, something might go wrong during collection of biological samples - especially blood specimens - including identification errors, use of incorrect devices for venipuncture (i.e., butterfly needles or I.V. catheters), prolonged tourniquet placing, unsuccessful attempts to locate the vein, collection of unsuitable samples for quality (e.g., hemolyzed, contaminated) or quantity (e.g., insufficient amount of blood or inappropriate blood to anticoagulant ratio), inappropriate mixing of the sample and inappropriate procedures for transportation, preparation (e.g., centrifugation) and storage. Although most healthcare professionals would agree that the relative frequency of preanalytical errors is relatively modest, such a small rate might still reflect meaningful numbers due to the vast number of tests performed in the modern era of managed care. Although most laboratory errors would not affect patients' care, some of these may still be associated with further inappropriate investigations, thus triggering unwarranted costs increase and inconvenience. More importantly, inappropriate care or unjustified changes in therapy might also be a result of laboratory errors. Missed, wrong or delayed diagnosis, in particular, can result from failure to order an appropriate diagnostic test, identification errors, tests performed on unsuitable specimens for quantity or quality, release of results despite a poor performance of quality controls, delayed notification of critical values, incorrect interpretation of test results. Therefore, governance of this crucial phase of the total testing process offer a great potential for improving the total quality in laboratory diagnostics and enhance satisfaction of stakeholders. Standardization and monitoring of most, if not all, preanalytical variables is foremost, being associated with the best organizational and clinical revenues. The most reliable strategy should also be tailored to both predict the onset of accidental events (incidents) developing through this process, ultimately decreasing the vulnerability of the single preanalytical steps. These targets can only be attained by implementing a multifaceted strategy, which should develop first through process analysis by validated tools (e.g., six sigma, hazard ratio, etc), implementation of reliable procedures for systematically identifying and tracking errors (using reliable preanalytical and universally agreed indicators of performance), reduction of complexity and error-prone activities. Since most preanalytical uncertainties occur during sample collection, education and training of healthcare professionals by dissemination of operative guidelines and best-practice recommendations is also crucial. Finally, reassessment and rearrangement of quality requirements and continuous monitoring of performances would enable such changes to be systematically evaluated and eventually rearranged.

OPEN EDUCATIONAL RESOURCES IN BLS: OPPORTUNITIES AND CHALLENGES

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Backgroung
Open Educational Resources (OERs) are educational resources that are "freely available for use, reuse, adaptation, and sharing". The type of OERs that has attracted the attention of educators and researchers are Massive Online Open Courses (MOOCs), open and distance courses, freely available, that can be accessed via web by a high number of participants. Although the origin of MOOCs is recent, this type of courses are now offered by the most prestigious international Universities on their own or in partnership with startups, such as Coursera and EdX. Few years of experience on MOOCs have been enough to induce a profound rethinking of academic education.

Objective
The aim of the presentation is to give the audience an overview of the OERs and MOOCs phenomena, highlightening opportunities and challenges in health and medical education.

Methods
A personal, non systematic review of educational and health literature on OERs and MOOCs, searching Medline and ERIC databases since 2008.

Discussion
The spread of OERs, and particularly of MOOCs, raises many questions to academic and healthcare educators: Will students consider MOOCs an alternative to a residential experience? Will working adults take into account MOOCs as an alternative to professional education courses? Will Universities offer transferable credit or full credentials for MOOCs? Will MOOCs represent a step towards the standardization of healthcare professionals curriculum. And what about sustainability of MOOCs? All these issues will be discussed in the presentation.

CPD FOR MEDICAL TECHNOLOGISTS IN SOUTH AFRICA: ITS IMPLEMENTATION AND CHALLENGES AHEAD

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Research Fellow: University of Johannesburg, Johannesburg, South Africa.

Background
Since 2002 all Health Care Professionals in South Africa (S.A.), including; Medical Technologists (MT's), are required to participate in a compulsory continuing professional development (CPD) programme implemented by the Health Professions Council of South Africa (HPCSA).
A HPCSA, CPD Committee was subsequently established, that included the Professional Board for Medical Technology as well as the Society of Medical Laboratory Technologists of South Africa (SMLTSA). The aim was to develop policy proposals for a uniform but flexible system of CPD that would accommodate the diversity of the profession. According to this framework all role players involved in the profession of Medical Technology would contribute to making CPD activities accessible to all registered MT's and create a positive attitude to CPD. The role players would include the HPCSA, employers and top management, SMLTSA, Medical Companies, other Health Professionals, Higher Education Institutions (HEI's) and the individual. But is this happening today? For example, applications from MT's to join SMLTSA are declining each year and morale among the majority of MT's in S.A. is extremely low.

Methods
MT's would be required to complete a series of accredited continuing education activities each year. The activities would be clustered together to represent a hierarchy of learning approaches and strategies. They would then select activities from the hierarchy to meet their particular needs or the demands of their practice environments. It was anticipated that the system would address the unique South African environment by providing a range of activities that would be readily accessible to all. Is this feasible? As the demographics between urban a rural areas within S.A. are considerable.

Results
It must be emphasised that the task of collecting CPD credits; i.e. Continuing Education Units (CEUs) remains the responsibility of the MT and is therefore a system based on, 'trust'. A proposed framework, offers suggestions for CPD activities, whereby MT's would accumulate a series of activities. This was to answer the concern, whether CPD should be measured by CEUs alone. Additionally outputs should be reflected in both the profession and the workplace and a system should be implemented to measure such outputs through for e.g. 'an individual portfolio system' (2017). Has this happened?

Conclusion
These current obstacles regarding CPD for MT's in the South African context will be addressed as well as the future of CPD for MT's in S.A. Finally, conclusions and the way forward will also be discussed.

Keywords: CPD, HPCSA, SMLTSA, CEU's.

FORSSMAN PREVALENCE IN A PORTUGUESE POPULATION SAMPLE AND ITS EXPRESSION IN NORMAL AND CANCER TISSUES

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# - All authors contributed equally to the research work.

Introduction

Forssman (Fs) antigen (Ag) was discovered in 1911 by Frederick Forssman. It belongs to a new histo-blood group which is described as being expressed in red blood cells (RBC) and tissues depending on the species. In humans, three unrelated English families have been described with this Ag in the RBC surface. Forsman Ag expression has been identified in some normal and cancer tissues.

Aim

The aim of this study was to estimate the prevalence of the Forsman blood group in a Portuguese sample population and to evaluate the Fs Ag expression in human normal and cancer tissues.

Material & Methods: Initially a standard tube technique was used to evaluate the presence of antibodies (Ab) anti-Fs in plasma samples and classify the immunoglobulin involved. An immunohistochemical protocol was established to detect the Fs Ag expression in normal tissues and in 7 tissue samples from patients with colon adenocarcinoma.

Results & Discusion

Anti-Fs was identified in 4961 of 4964 samples tested. 192 samples were used to classify the antibody which was confirmed as IgM in 52% cases.

Tissue studies demonstrated the Fs Ag in the following normal tisses amygdala, pancreas, kidney, liver and lung. In contrast none of the tumour cells expressed the antigen

Conclusion

The initial results demonstrate the low prevalence of the Forsman blood group in this Portuguese population. The antibody is characterized as predominately Ig M. Fs Ag is first described here in normal amygdala and liver. This study does not confirm previously reported antigen expression in neoplastic tissue. The tissue studies indicate that additional work is required to characterize the Forsman Antigen expression in a range of normal and neoplastic tissues.

Keywords: Forssman antigen; blood group; antibodies; tissues; cancer

SIMULATION IN EDUCATION OF MEDICAL LABORATORY SCIENCE STUDENTS IN CANADA

Nielsen Christine, Canada

The CSMLS is the national professional association and certification body. We are involved in creating competency profiles, prior learning assessment, certification, education and other member services. With the ageing workforce, the number of new graduates is not enough to serve the patient population. CSMLS is calling for 400 new education seats annually, to ensure optimal patient care. This talk will explore the national response needed to make this a reality.
Through stakeholder engagement sessions, data collection and use of health human resource data available, CSMLS has been assembling information, leading to a Call To Action. It is asking the education programs to take in more students across Canada, while ensuring high quality clinical placements. It is thought that simulation (both high and low fidelity) can be implemented, to reduce the length of time needed in practicum, allowing for more students to complete the necessary education. CSMLS has been leading the dialogue in Canada with educators – to allow for sharing of information and best practices, and to further the body of knowledge.
The accessibility of clinical placements is a key success factor in increasing the number of people entering the workforce. Through collaborative efforts and research, the occupation as a whole can use simulation as a means of enhancing the number of graduates needed for effective patient care. Some innovative practices will be reviewed during the presentation.

IMPROVEMENT OF LABORATORY QUALITY IN NORWAY

Line Nilsen Nygård, BLS, Noklus, St. Olavs hospital, Trondheim University Hospital, Norway

Norwegian Quality Improvement of Laboratory Examinations (Noklus) is a national not for profit organization. Our laboratory consultants and medical specialists are based at local hospitals throughout the country. We aim to ensure that all laboratory examinations that are ordered, performed and interpreted will safeguard patients' needs for investigation, treatment and follow-up. Noklus offers services to all Norwegian General Practitioner offices, hospital laboratories, nursing homes and other health care institutions. Noklus consultants provide guidance and tutoring through site visits, telephone, email, consultations and courses to all participants outside of hospital. We advise on the selection of control material and on the choice of testing methods. Noklus offers access to internal quality control procedures and schemes as well as laboratory procedures. All Noklus participants are offered access to our external quality assessment (EQA) program. Our aim is to offer external assurance of all types of analysis that are commonly carried out in non-hospital laboratories

STRENGTHENING BIOSAFETY AND BIOSECURITY SYSTEMS IN RESOURCE LIMITED SETTINGS: THE ROLE OF BIOSAFETY PROFESSIONAL CERTIFICATION IN EAST AFRICA

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The WHO's Joint External Evaluation tool for measuring compliance to the International Health Regulations calls for "certified biosafety professionals stationed at all laboratories that have the potential to handle biological agents". To meet this and other growing needs of its members, the International Federation of Biosafety Associations (IFBA) launched a new and unique biosafety certification program for laboratory professionals and biomedical scientists. The certification scheme establishes competencies in a variety of technical disciplines including biosafety, biosecurity, biocontainment facilities, biological waste management and biosafety cabinets allowing a professional to advance his/her expertise and qualifications throughout their laboratory career. Over the past two years, the Biorisk Management Association of Kenya (BMAK), in collaboration with the Association of Kenya Medical Laboratory Scientific Officers, have hosted regional training workshops in biorisk management and biosecurity and administered IFBA professional examinations. Out of 82 candidates who sat for the exams, 72 are IFBA certified professionals from across the East African Region; Kenya, Uganda, Burundi, Tanzania, Ethiopia, South Sudan and Rwanda. Some certified professionals are currently team leaders of biosafety and biosecurity in their respective work stations. For example in Kenya, the biosafety dockets held in the ministry of health, Kenya Medical Research Institute, National Biosafety Authority, a few institutions of higher learning and in non- governmental organisations affiliated to human and animal health are headed by IFBA certified professionals. These professionals together with other stakeholders have also developed biosafety and biosecurity training manuals/ curriculum within their institutions. In the ministry of health for instance, more than 3500 medical laboratory employees distributed in all the 47 counties in Kenya have been trained in biosafety and biosecurity using manuals developed by certified professionals. Currently, draft biosafety and biosecurity curricula are under development in key public and private universities and in most of them certified professionals participate as key stakeholders. The ministry of health is also spearheading a harmonised national curriculum for biosafety and biosecurity encompassing human, animal and plant health developed by stakeholders including some that are certified in biorisk management. Evidence on the role of biorisk certified professionals in enhancing knowledge and practices of biosafety and biosecurity within the East African Region will be presented and discussed.

TOTAL COST OF CARE: A NEW PERSPECTIVE ON LABORATORY UTILIZATION MANAGEMENT

Rick Panning, MBA, MLS(ASCP)CM, Senior Administrative Director,
Laboratory Services, HealthPartners, Bloomington, MN USA

Background: Introduction provided to Cathie Otto.
Rick has been a Medical Laboratory Scientist since 1975 and has served in laboratory leadership positions in the Minneapolis-St. Paul healthcare market since 1980. Rick is currently the Senior Administrative Director for laboratory services for HealthPartners (7 hospitals, independent central laboratory, physician office laboratories). Previously Rick served as the President of Laboratory Services for Fairview Health Services (including the University of Minnesota Medical Center), CEO for the American Red Cross North Central Blood Center, and Vice President of Laboratory Services at Allina Health (10 hospitals, central laboratory and owned physician practices).
While organizational structures have varied in these organizations, in each there has been a common journey which includes leadership, standardization, measurement and benchmarking, integration, process improvement, test utilization and optimizing total cost of care.

Rick has been actively involved professionally within the American Society for Clinical Laboratory Science since 1975 and served on the Board of Directors from 2004-2010, including a term as President from 2008-2009. His recent focus has been in advocacy and government affairs and served as chair of the Root Cause Task Force from 2016-2018. Previously Rick served as the ASCLS representative to the Coordinating Council for the Clinical Laboratory Workforce, including 2 years as chair. Rick served 6 years as a member of the Board of Directors for the Clinical Laboratory and Standards Institute (CLSI), and is currently serving as the Treasurer, chair of the finance committee and a member of the executive committee.

Methods, Result and Conclusion
Objectives:
- Describe the HealthPartners Total Cost of Care Model
- Describe how laboratory test utilization impacts a patient's total cost of care
- Describe three examples of how the management of test utilization (over- or under-) impacts the total cost of care

Summary:
- Historic focus on managing test utilization has been on reducing testing.
- There is also a need to understand when increasing utilization or performing more testing will actually reduce the overall patient "total cost of care" (TCOC) and improve patient care.
- Examples of Lab initiatives will be provided

LIQUID BIOPSY: TECHNOLOGIES AND APPLICATIONS IN CLINICAL ONCOLOGY.

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The term "liquid biopsy" refers mainly to assays that analyse circulating free DNA (cfDNA)and/or circulating tumour cancer cells (CTCs) present in blood. Compared to traditional biopsy, which involves removing a piece of tumour tissue from the body, a liquid biopsy is less invasive and is associated with less potential complications for the patient. Consequently, the Liquid Biopsy can be an alternative to identify cellular and molecular signatures that can be used as biomarkers to detect early-stage cancer, predict disease progression, longitudinally monitor response to chemotherapeutic drugs, and provide personalized treatment options.

Despite growing excitement around the use of liquid biopsies in oncology, there are a number of questions that are under investigation on both biological and technical issues.

Biological issues refer to the complexity of cancer, such as intra tumour heterogeneity, (tumour genomes of cancer cells are unstable and may frequently acquire novel changes).

Technical issues are also relevant because, given the low abundance of CTCs and cfDNA in blood, analytical evaluation of liquid biopsies is extremely challenging. Examples of these analytical approaches for both CTC and cfDNA analysis will be presented.

Clinical applications of Liquid Biopsy require to evaluate the ability of the tests to detect and measure the presence of a biomarker accurately, reproducibly, and reliably (analytical validity including pre-analytical considerations). Then the results of the tests should accurately divide one population of patients into two or more separate groups (clinical validity). Finally, the results of the test should demonstrate benefits for the patient (and do not pose a risk; clinical utility).

A variety of liquid biopsy tests have been made available for use in clinical practice but, up to now, only two tests have been proved to be of clinical utility.

For evaluation of CTCs, the only FDA approved test is the CELLSEARCH® Circulating Tumor Cell Kit. CELLSEARCH® is not intended for early diagnosis but is routinely used to monitor and predict cancer progression in metastatic cancer and evaluate response to chemotherapy. CTCs counts using CELLSEARCH® have been shown to be a reliable independent predictor of progression-free survival (PFS) and overall survival (OS) in a percentage of patients with metastatic breast, colorectal, and prostate cancer. CELLSEARCH® uses a combination of immuno-magnetic capture imaging to identify CTCs and discriminate them from leukocytes.

For cfDNA, only a single liquid biopsy test has been considered possessing sufficient clinical utility to be approved by the U.S. Food and Drug Administration (FDA), i.e. the COBAS® assay for mutations in EGFR, to be used in non-small-cell lung cancer.

In conclusion, in spite of a limited clinical use of liquid biopsy today, research is rapidly evolving, so there should be enough evidence soon to formulate evidence-based guidance for a variety of clinical scenarios in oncology.

QUALITY IN LABORATORY MEDICINE: TOOLS AND SUPPORT

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The past fifty years saw a dramatic evolution of Laboratory Medicine and today, this relatively young discipline, plays an central role in several diagnostic pathways. To support clinical decisions, laboratories are expected to consistently deliver technically valid results, fit for purpose, in a timely manner, with the most judicious use of resources. These tasks can be accomplished only if all the phases constituting the laboratory workflow, i.e pre-analytical, analytical and post analytical, are rigorously defined, monitored and periodically evaluated. The ISO 15189 "Medical laboratories- Requirements for quality and competence" is recognized as the norm providing the appropriate framework for clinical laboratories willing to work at the best quality level. The ISO 15189 requirements cover management aspects as well as technical aspects related to the whole process and stress the need of assessing and maintaining staff competence. Additionally , it is worth to notice, that that ISO 15189 introduces a new focus on analytical aspects: examination procedures need to be validated or verified in order to guarantee that their performance characteristics are congruent with the intended scope of the test. This means that laboratories are requested to produce evidences on metrological traceability of calibration standards and on imprecision, trueness and diagnostic accuracy of tests. Manufacturers data may or may not be sufficient and laboratories need to find other means of providing confidence in the results. The EQA/IQC , the backbone of clinical laboratory Quality, is critical in demonstrating competence according to ISO 15189. Risk management implies a regular reflection and evaluation on the work process for impact and potential failures to reduce risk. All this represents a considerable, although exciting, challenge for the laboratories willing to assess and declare their competence against international standards; scientific societies may play a fundamental role in gathering expertise, providing tools and suggesting pragmatic approaches towards continuous quality improvement.

QUALITY AND SAFETY IN LABORATORY MEDICINE

Mario Plebani, Department of Laboratory Medicine, University-Hospital, Padova

Background
Despite monumental advances in quality improvement over the past few decades, clinical laboratories are still under increasing pressure to achieve efficiency, timeliness, safety, effectiveness and patient-centered services. Currently, data on laboratory errors and associated diagnostic errors and risk for patient harm (38, 39) emphasize the need for a paradigmatic shift: from a focus on volumes and efficiency to a patient-centered vision restoring the nature of laboratory services as an integral part of the diagnostic and therapy process.

Methods
Process and outcome quality indicators have been developed as effective tools to measure and improve laboratory services by stimulating a competition based on intra- and extra-analytical performance specifications, intermediate outcomes and customer satisfaction. These indicators and a standardized reporting system have been developed to build a Model of Quality Indicators (MQI), as promoted by the International Federation Of Clinical Chemistry and Laboratory Medicine (IFCC).

Results
Using the data collected by several laboratories attending the project on the MQI at an international level, it was possible to identify provisional performance specifications for all steps of the testing process, namely extra-analytical phases. In particular, performance specifications for the pre-analytical phase, including patient and specimen identification, sample quality (haemolysis), as well as post-analytical phases such as data transcription, turnaround time and notification of critical results appear to be fundamental tools for improving quality and patient safety.

Conclusions
Current evidence highlights that laboratory process quality should begin and end "outside the laboratory", extending quality measurement to steps in the total testing process antecedent to the analytical step (pre-pre-analytical phase) and subsequent to result reporting (post-post-analytical phase). Appropriate stewardship of laboratory resources may improve patient care by ensuring the correct tests are performed at the appropriate time while unnecessary tests are avoided. At the end of the testing process, appropriate test interpretation and utilization should be pursued. Analytical quality, however, still maintains its central role as a "core business" of laboratory professionals

BONE MARROW CELLS ENGINEERED WITH IMMUNOREGULATORY PROTEINS AS AN EFFECTIVE MEANS OF FACILITATING STEM CELL ENGRAFTMENT AND CONTROLLING GRAFT-VERSUS-HOST DISEASE IN ALLOGENEIC HOSTS

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Allogeneic bone marrow transplants, as source of hematopoietic stem cells, have the potential to cure hematological malignancies and inherited hematological disorders. The routine application of allogeneic bone marrow transplantation (BMT) as a therapeutic intervention in the clinic, however, is complicated by nonmyeloablative conditioning of the recipient, graft-versus-host disease (GVHD), and lack of engraftment. Although elimination of T cells from the donor bone marrow inoculum is effective in curtailing GVHD, it results in compromised engraftment. Thus, strategies targeting specific and effective elimination of only the pathogenic T effector cells may have important implications for routine application of BMT to the clinic. We have developed a novel approach, designated as ProtEx™, that allows for transient display of recombinant exogenous immunoregulatory proteins on the surface of bone marrow cells in a rapid and efficient manner. Bone marrow cells were engineered with two proteins that target graft protective T regulatory cells and destructive T effector cells for modulation. Transplantation of the engineered cells into allogeneic hosts with nonmyeloablative conditioning resulted in effective and durable engraftment without complication of GVHD. The mechanistic basis and the clinical potential of this novel approach will be discussed.

PREANALYTICAL COMPETENCY ASSESSMENT: A Q-PROBES STUDY FROM THE COLLEGE OF AMERICAN PATHOLOGISTS

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Background
The College of American Pathologists (CAP) has a long-standing history of developing customer-focused, scientifically validated program monitors for the documentation of quality performance and outcome measures in laboratories, health care delivery systems and accreditation programs. This is achieved through execution of external peer-comparison studies, such as Q-PROBESTM, that provide a one-time comprehensive assessment of key processes to aid in quality improvement efforts in the laboratory. Since high quality preanalytic processes implemented during blood specimen collection are crucial to assuring reliable laboratory test result, which in turn can impact patient care, diagnosis, and cost, the Q-PROBESTM study described here was designed to assess venous blood collection competency by studying errors that occur during the preanalytic phase of laboratory testing.

Methods
A total of 447 phlebotomists, defined as any study participants who collect blood specimens, from 46 institutions reviewed five video scenarios, each demonstrating a variety of blood collection errors across the pre, during, and post-venipuncture stages of blood collection. Each video has a defined list of categorized required errors used to compute video scores (%). The list of categorized required errors for each video was developed based on procedures presented in the Clinical Laboratory and Standards Institute (CLSI) standard GP41, Collection of Venous Blood Samples (7th edition)[1]. Overall scores were computed by combining and evaluating all 34 required errors from the five video scenarios.

Results
The distribution of the institutional average overall phlebotomist scores out of 42 eligible institutions ranged from 43.3% to 65.3% for the 10th to 90th percentiles with a median score of 55.9%. There was a wide range of variability of institutional scores between and within each video. Institutions submitting data for fewer than three phlebotomists were excluded from the All Institutions Percentiles distribution. In addition, phlebotomists submitting data for fewer than four videos were excluded from the overall phlebotomist score aggregate distribution summary. The report package included both institution and phlebotomist reports. The final data analysis will provide additional detail, including any statistical associations that are found between phlebotomist work experience and institutional practices with video scores.

Conclusions
This study validates the design of a successful preanalytical competency assessment program. Blood collection stage summary results allow an organization to identify specific areas of the blood collection process (pre, during, or post-venipuncture) that may benefit from focused training efforts. While management review of individual results can be used to develop and plan training session topics, phlebotomists should use their individual results to hone in on areas for specific learning.

[1]CLSI. Collection of Diagnostic Venous Blood Specimens. 7th ed. CLSI standard GP41. Wayne PA: Clinical and Laboratory Standard Institute; 2017.

THE MOLECULAR PATHOLOGY LABORATORY FOR THE ANALYSIS OF SOLID TUMORS IN THE ERA OF NEXT GENERATION SEQUENCING

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Background

The molecular analysis of solid tumors (mass forming tumors of organs and systems, leukemias are not included) is performed to define the diagnosis, prognosis and response to treatment (predictive biomarkers) of human neoplasms. The relevance of tumor biomarker analysis for the management of cancer patients is ever increasing, also because of the availability of drugs that can target specific molecular alterations ("actionable" mutations). Next generation sequencing (NGS) is becoming the method of choice for the molecular analysis of nucleic acids. NGS is being implemented in many molecular pathology laboratories.

Methods

PubMed literature search for "next generation sequencing", "guidelines", "reporting", "molecular pathology" and shared experience with the Italian molecular pathology and predictive medicine network (gruppo italiano di Patologia Molecolare e Medicina Predittiva-PMMP, SIAPEC-IAP).

Results

The opportunity offered by NGS include: (i) Massive parallel sequencing capability allowing the analysis of multiple targets in multiple samples with relatively short turn-around times; (ii) Relatively low quantity of DNA/RNA inputs required for the analysis; (iii) Potential for simultaneous screening of a variety of genomic alterations (single-nucleotide variants-SNVs, multiple-nucleotide variants-MNVs, small and large insertions and deletions, copy number variation-CNVs); (iv) High analytical sensitivity (targets are sequenced hundreds of times); (v) Relative quantification of the variant sequence (mutant allele frequency , MAF); (vi) Low cost of multiple-marker screening (vs. low- and medium-throughput platforms). Targeted gene sequencing panels (custom-designed, or predesigned commercial) are the type of NGS assays best suited to the needs of molecular pathology. NGS is a complex procedure, with "wet bench" (typically: amplicon library preparation, emulsion PCR, sequencing) and "dry bench" (base calling and alignment, variant calling and variant annotation) parts. The context of NGS in the molecular pathology laboratory is different from that of other molecular laboratories (e.g. medical genetics). Implementation of NGS in the molecular pathology laboratory may be problematic also due to the type of specimens that requires the analysis. Challenges include: (i) Small sample size (e.g. biopsies) (ii) Little nucleic acid quantity (iii) Poor nuclei acid quality (formalin fixation paraffin embedding, FFPE) (iv) Variable fixation/processing of the samples, that makes it difficult to standardize protocols (v) Variable neoplastic/non-neoplastic cells ratio (tumor cell enrichment); (vi) Necrotic material/cellular debris (vi) Tumor heterogeneity. It is essential that NGS procedures be validated in individual laboratories by sequencing clinical tumor specimens with known somatic aberrations detected by an orthogonal sequencing method previously validated in the laboratory (e.g. Sanger, Pyrosequencing) and/or by sequencing human cell lines positive for somatic mutations/germ line polymorphisms (cell line samples need to be FFPE). Mutations in genes-of-interest and variant types of interest (SNVs, MNVs, IN/DELs, CNVs) must be present in the samples used for validation and recognized by the NGS procedure.

Conclusions

NGS is able to meet the increasing demand for the routine molecular analysis of solid tumors. However is use also poses important challenges that must be taken into account. Validation of NGS protocols in individual molecular pathology laboratories is essential for the successful implementation of NGS.

MOLECULAR PATHOLOGY AND PREDICTIVE MEDICINE

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Background

Molecular pathology is a well established and rapidly developing field within pathology. It is focused to the diagnosis, prognosis and therapeutic response of human disease, with particular interest in oncology field. This new branch of pathology is based on molecular testing, namely the testing of single mutations, single genes or small panels of genes or more extensive analysis of the genome.

In the recent past the clinical role of pathologists is going far beyond morphological diagnosis. Pathologists are now increasingly involved in decisions on treatment and monitoring of response to treatment is coming a major role. Understanding of aetiology and pathogenesis of disease must also be supported by an understanding of what treatment will do. All patients are genetically different and for this reason we need to personalize and to monitor treatments.

Methods

This is an overview of Literature and Guidelines of Molecular pathology using PubMed search for "molecular pathology" (since 2010) and data from the most important international Molecular pathology groups' websites.

Results

Today the molecular analysis is becoming a fundamental part of pathological diagnosis and prognosis of different pathologies in different organs. They are substantial to recognize genomic alterations which can drive the diagnosis, as BRAFV600E mutation in papillary thyroid cancer, or which can drive to the appropriate therapy as RAS or BRAF mutations in colon cancer (see table 1). However, the point of situation is difficult to do. Every day advances in understanding the molecular basis of disease are changing, and in a parallel way, the technologies are rapidly becoming more complex and more complete. Available technologies today are multiple, starting from the easier tests as immunohistochemistry or in situ hybridation to reach next generation sequencing which facilitates the analysis of multiple genes and now can be used to sequence the coding regions of the genome (the exome) for clinical testing. Data are becoming more and more complex and the risk for pathologists and laboratory scientists is to be not prepared to deeply understand the real meaning of molecular alterations. So the help of the bioinformatics is needed. Moreover, new molecular pathology laboratories rarely can support the consistent growth of clinical requests for molecular tests. They cannot "do it all" and for these reasons probably we will assist to the born of new reference sub-specialized laboratories.

Conclusions

Molecular pathology together with predictive medicine are two rapidly developing field within pathology which probably will change the classic role of pathologists and laboratory scientists. They will be dedicated mostly to the deeply understand the molecular basis of disease and to research them with multiple every day changing methods. New figures will be necessary in pathology labs.

QUALITY IN LABORATORY MEDICINE: TOOLS AND SUPPORT (23/09/2018). INFORMATIC TOOLS

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Besides Laboratory Information System (LIS) developed to support laboratory's operations from pre-analytical (test ordering, specimen tracking), analytical (scheduling, order distribution to lab instruments) and post-analytical phases (report production, data storage), in recent years there has been a growing interest and diffusion of middleware. This high customizable software, strategically located between the laboratory instruments and the LIS, significantly reduces resource utilization while improving lab productivity, quality of lab reporting and the effectiveness of the diagnostic workflow. Main uses of middleware include user-defined automatic reflex and rerun, real-time interactive quality control management, autoverification of laboratory results by check rules, tracking of laboratory performance metrics, event notification, comment insertion and diagnostic algorithm application, instrument interfacing to efficiently integrate test results from different laboratory work areas, sample storage and retrieval.

In addition to these structured solutions, many other commercial or free (laboratory user-made or even distributed by Scientific Societies) softwares are available to help laboratories in different situations: utilities or apps to support user for Certification or Accreditation, quality control management, data analysis (including reference interval estimation, analytical method comparison, verification of alignment between instruments and method validation) and recording of preanalytical non-conformities.

Informatic tools play a pivotal role in modern Clinical Laboratories to fulfil quality requirements and support the entire diagnostic workflow, with great benefits for patients, laboratory personnel, clinicians and Health Services.

BSL3 LABORATORY DESIGN AND BIOSAFETY PRACTICES IN SINGAPORE

Viji Vijayan, Assistant Dean, Duke-NUS Medical School, Singapore

Designing and building a successful Biosafety Level 3 (BSL3) laboratory that can be safely operated and adequately maintained over the long term requires careful advance planning by a team of qualified scientists, engineers, architects, and facility maintenance personnel. Conducting a detailed risk assessment (e.g. defining the pathogens and standard operating procedures to be used) is a key first step that will define the containment requirements, the equipment needed, and the facility's architectural and mechanical concepts. The resulting facilities are built-to-purpose and allow for investment in BSL3 infrastructure, equipment and precautions suited to the type of procedures actually performed. Finally, while appropriately designed and certified physical facilities are essential, the most important aspects of the BSL3 laboratory are the practices and procedures used by trained laboratory staff. The WHO's Laboratory Biosafety Manual states that "no biosafety cabinet or other facility or procedure alone guarantees safety unless the users operate safe techniques based on informed understanding." The Duke-NUS Medical School's BSL3 laboratory and animal facility was designed, built and certified using these principles. The facility has been in operation for five years fulfilling the needs of infectious diseases research and yet without major incidents. This has only been possible through team effort and well-thought out standard operating procedures which are commensurate with risk and fully implementable such that researchers are able to perform their work in a timely and safe manner. Every day of the five years has been a learning experience and this will be presented and discussed in detail.

LEARNING OUTCOMES AND COMPETENT PRACTICE

Alan Wainwright, 1Institute of Biomedical Science, London, United Kingdom

Professional practice in biomedical laboratory science is fundamental to patient healthcare and requires a highly trained and competent workforce capable of investigating and monitoring disease progression and treatment. This is achieved through periods of academic learning that provide knowledge and understanding of scientific principles, legislation and professional practice, and "on-the job" training to develop the ability to apply these: firstly in accordance with standard operating procedures but often advancing to more complex and flexible situations. In many countries this is measured against regulatory standards of proficiency that define discrete areas of practice. In reality these standards interrelate to define a professional scope of practice common to all biomedical laboratory scientists.

Academic teaching uses learning outcomes to express what a student is expected to achieve by the end of the course/module. They are usually expressed in terms of knowledge and skill, thus linking with the assessment strategy and measurement of student's ability. All three inform and guide expectations for both the tutor (inputs) and the student (outputs).

Can the same be said for professional training? Training carried out by experienced staff is often seen as something they just 'do': transferring their own knowledge, experience and skill through a process of explanation, demonstration and observation. Training is judged to be complete when an individual is capable of performing to a consistent standard and therefore deemed competent to practice at a particular level in a technique. As this can depend on personal and organisational standards and preferences learning outcomes in professional training could arguably be used to bring more structure and standardisation to the training process, i.e. learning outcomes for knowledge and skill are measured through the ability to integrate these into effective practice at a recognised standard.

However, the relationship between learning outcomes and competence is complex. A simple narrow view is that it is about performance, the ability to do a task (primarily the cognitive and psychomotor elements of Bloom' taxonomy, rather than the affective element). A much broader view is that it also includes the ability to transfer skills and knowledge to new situations, or the attitude /personal effectiveness required in the planning of work or coping with non-routine activities. In effect we are potentially looking at different levels of performance associated with different grades of staff so this presentation will consider the application of learning outcomes in training and how they can benefit the assessment of competence in terms of roles and "fitness to practice".

STEM CELL THERAPY FOR KIDNEY INJURY-PRECLINICAL PROMISES AND CHALLENGES FOR TRANSLATION

Željka Večerić-Haler, assistant prof. Željka Večerić-Haler, University Medical Centre Ljubljana, Slovenia

No pharmacological intervention has been shown convincingly to improve outcome in patients with acute kidney injury, advanced chronic kidney disease or failuring kidney graft due to patophysiologic processes driven by chronic rejection. Cell-based therapies have the potential to make a large contribution toward currently unmet need of these patients, however many challenges still need to be overcome before this can become a reality.

As shown by our and other experimental groups who are working on animal models of kidney failure, in acute period post kidney injury stem cells not only produce a source of trophic molecules to minimize damage and promote recovery, but also potentially turn to new cells in order to replace those that were lost due to injury. These actions are followed by improved renal function, morphological integrity , as well as improved survival of experimental animal. The protective effects in improvement of glomerulosclerosis and interstitial fibrosis associated with chronic kidney failure after stem cell therapies were also shown. Furthermore, the immunoregulatory properties of mesenchymal stem cells were associated with improvements of allotolerance and amelioraton of chronic allograft failure due to rejection. Although preclinical studies have shown promise in ameliorating diverse forms of kidney injury by stem cell therapies, there is not much known regarding their possible behaviour in late period after transplantation, especially in the context of possible tumorigenicity. These and other unanswered questions raise concern and delay successful introduction of stem cell therapy approaches to treatment of kidney injury in human. Consequentially, stem cell therapies for kidney failure are still at an early stage and it is difficult to draw conclusions from current clinical trials about the efficacy of the different treatments used in humans.

The speaker will review the potential of stem cells in therapy of acute and chronic kidney injury, highlight new evidence from the ongoing clinical trials and based on her experience discuss most serious problems associated with translating stem cell technology to a clinical therapy for kidney failure.

ORAL COMMUNICATIONS

ID: 14835

THE NATIONAL INSTITUTES OF HEALTH (NIH) DESIGN REQUIREMENTS MANUAL

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INTRODUZIONE

The National Institutes of Health (NIH) Design Requirements Manual (DRM) establishes policy, design requirements, standards and technical criteria for use in planning NIH owned, leased, operated and funded buildings and facilities. The DRM is the only detailed design requirements and guidance document of its kind.
The NIH's Division of Technical Resources (DTR) has updated and improved the Design Requirements Manual (DRM) since its inception in 1996. Over more than 20 years the DRM has evolved to capture the collective design knowledge, based on lessons-learned and research, of NIH Institutes and Centers, Federal agencies such as the CDC and FDA and private sector experts.

METODI

This presentation will provide an overview of the DRM, focusing on recent changes and updates. Subject matter experts (Engineers and Lab Planner/Architect) from DTR will discuss Planning, Architectural, Structural, Mechanical, Plumbing and Electrical design criteria for NIH biomedical and animal research facilities and facilities funded by the NIH for which use the DRM as a guidance document.
This presentation will also discuss common challenges in the design, construction and operation of the biomedical and animal research facilities. This presentation will benefit Engineers, Architects and Bio-safety professionals involved in the design, construction and operation of these specialized research facilities.

RISULTATI

Learning Objectives:
• Identify key biomedical and animal research lab planning concepts.
• Understand the contents, organization and use of the DRM.
• Explain principal features of biocontainment.
• Apply best practices of research facility design

CONCLUSIONI

This presentation will provide participants with an understanding of the Design Requirements Manual, including the application of NIH's biocontainment and research facility design principles and practices.
Note to Conference Organizers: This presentation can be a class or workshop that will be of interest to laboratory uses, laboratory designers and biosafety professionals. The presentation can be tailored in content and length to meet the requirements of the conference and the needs of participants. We are happy to discuss your expectations and how we can help make the conference successful.

ID: 14849

IS HIGH GRADE SQUAMOUS INTRAEPITHELIAL LESION (HSIL) ALWAYS HIGH-RISK HPV POSITIVE?

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INTRODUZIONE

The main target in the cervical screenings program is to detect cell changes with a high risk of developing into cervical cancer. Especially women with the diagnose HSIL are at risk.
It is considered to use HPV-test as a primary screening in Denmark. The question is will women with HSIL always be HPV positive? It is known that a positive high-risk HPV test will not always lead to cell changes. However, is the opposite possible? Will there be a difference between using a HPVRNA or a HPVDNA test?

METODI

50 patients were analyzed consecutively from 20.10-7.12 2017 at the University Hospital Zealand, Department of Pathology, Naestved. All the patients were diagnosed cytological with HSIL and had a corresponding histological diagnose of CIN 2 or 3. All of them were subsequently tested in both COBAS 4800® (HPVDNA) and APTIMA PANTHER® (HPVRNA)
Both analyses test for the same 14 types of high-risk HPV (16,18,31,33,35,39,45,51,52,56,58,59,66 and 68). The HPVRNA is genotyping for HPV 16 and HPV 18/45, the remaining 11 genotypes are together in one pool.
The HPVDNA test is genotyping for respectively HPV 16 and HPV 18, the remaining genotypes are in one pool.

RISULTATI

The results showed that patients with HSIL were HPVDNA and HPVRNA positive in 98 and 100 percentage of the cases respectively. The COBAS 4800® missed one sample (found negative), which were HPV positive for other types than HPV 16, 18/45 in the APTIMA PANTHER test. The genotyping showed that 24 (48 percentage) of the samples were positive in HPV 16 in both DNA and RNA. While 25/26(50/52 percentage) were positive in other types of HPV than HPV 16 in DNA and RNA respectively.

CONCLUSIONI

The project showed that these patients with HSIL are HPVDNA positive in 98 percentage and 100 percentage in HPVRNA. For detection of HSIL, the APTIMA PANTHER® HPVRNA test is more sensitive than the COBAS 4800® HPVDNA test. There is a discrepancy between COBAS 4800® and APTIMA PANTHER® because one sample was only positive in HPVRNA and not in HPVDNA.

ID: 14868

EPIDEMIOLOGICAL STUDY MODEL OF THE ANTIMICROBIAL RESISTANCE FOR ONE PREFECTURE IN JAPAN; EXTENDED-SPECTRUM BETA-LACTAMASE PRODUCING ESCHERICHIA COLI ISOLATED FROM LESS THAN 300 BED MEDICAL FACILITIES

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INTRODUZIONE

Recently, the establishment of the regional cooperation is needed for the antimicrobial resistance (AMR) controlling. In Japan, the microbiological testing of small-scale medical facilities is commissioned to commercial laboratories. Therefore, regional epidemiology data are collected in these laboratories. Extended-spectrum ß-lactamase (ESBL) -producing Escherichia coli is one of the most common AMR as community- and hospitalized-infection in Japan. The aim of this study is the establishment of regional surveillance in cooperation with commercial laboratories and the investigation of the molecular epidemiology about ESBL-producing E. coli in one prefecture in Japan.

METODI

Two hundred and seven ESBL-producing E. coli clinically isolated from Kanagawa prefecture were used. The isolates were found in less than 300 bed medical facilities via a commercial laboratory, and were collected with information regarding specimen, department, and patient status (inpatient or outpatient), as well as with facility information about the number of beds and location. The antimicrobial susceptibility and CTX-M type of the isolate were determined by PCR and direct sequencing in the strain.

RISULTATI

All strains were susceptible to imipenem, but 93% of strains were resistant to ciprofloxacin. The resistant rates of cefmetazole, ceftazidime, and cefepime were 4-23%, 16-68%, and 8-41%, respectively, and were different from region to region. Besides, 203 of 207 isolates were characterized as CTX-M type ESBL, and CTX-M-27 was dominant (64/203, 31.5%). Moreover, the ß-lactamase involving the substitution of 240 residue of asparagine acid to glycine, that is, CTX-M-15, -27, and -55, which is conferred on ceftadizime resistance, was determined at 59% of CTX-M type. To our knowledge, it was the first report that CTX-M-134 ß-lactamase-producing E. coli was isolated in Japan.

CONCLUSIONI

The present study reveals that the antimicrobial susceptibility of the strains differs from region to region in one prefecture in Japan. Furthermore, the local surveillance model cooperated with a commercial laboratory is available to predict the AMR dissemination and emergence at an early stage of the AMR.

ID: 14875

DEVELOPMENT OF A FULLY AUTOMATIC “SMART ROBOTIC ARM SINGLE SAMPLE PNEUMATIC TUBE SYSTEM” REDUCING CLINICAL TEST TUBES DELIVERY TIME

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INTRODUZIONE

In the past, Taipei Veterans General Hospital OPD used the "Conventional Pneumatic Tubes" to send urgent test tubes to the Biochemistry and Hematology Lab in another building, 400 meters away.
There are three major disadvantages of the "Conventional Pneumatic Tubes":
(1) Complex manual process for delivery (after blood drawing to test tube barcode sign), resulting in an average 24.6 minutes delivery time per tube,
(2) Long-term operation in sending out pneumatic carrier causes shoulder pain,
(3) 3 times manual barcode signing action (1 time before sending, 2 times (HIS and LIS) after Lab receiving test tubes).
The aforementioned problems can be improved by fully automatic operation, yet there is currently no automatic pneumatic system in the market. In the current study, we have developed a fully automatic system and successfully solved these disadvantages.

METODI

Combined the following instruments and software to develop a fully automated “Smart Pneumatic Delivery System”:
(1) Using the “Robotic Arm” to collect test tubes.
(2) Using 5 sets of “Barcode Scanner and Smart Software” instead of human eyes to identify types of testing tubes and assist operators in commanding robotic arm.
(3) Using 3 sets of “Sample Collection Box” to sort the sample tubes for automated barcode signing.
(4) Using 2 sets of “Tempus600® Single Sample Pneumatic Tube” to deliver testing tubes to the 3rd floor of the Biochemistry and Hematology Lab respectively from another building.
(5) Using the “Tracking Software” to track test tubes’ location.

RISULTATI

Indicator 1 - Reducing delivery Time: 61.8% progress Rate (From 24.6 to 9.4 minutes, average of 15.2 minute faster).
Indicator 2 - Shoulder Pain Improvement: 100% Target Achievement Rate (12 staffs all improved).
Indicator 3 - Establish Automatic Barcode Receipt System: 97.26% Target Achievement Rate (Reducing 3 times manual barcode signing action).

CONCLUSIONI

Taipei Veterans General Hospital has developed the world’s first “Smart Robotic Arm Single Sample Pneumatic Tube System”. It is equipped with multi advantages in delivering the tubes to different labs without any assistance of human labors; it is expected to be a standard facility for smart hospitals in sending test tubes.

ID: 14880

IMMUNOHISTOCHEMICAL REACTIONS APPLICATED WITH TISSUE MICROARRAY METHOD OF PREVIOUSLY FROZEN GLIOBLASTOMA TISSUES IN COMPARATION TO UNFROZEN TISSUE EMBEDDED IN PARAFFIN

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INTRODUZIONE

According to the WHO, glioblastoma are malignant astroglial tumors of grade IV. They are characterized by rapid growth, cellular polymorphism, creation of necrosis, neovascularization and the infiltration of neighbouring brain structures. By genetic alterations glioblastoma can be divided into primary (IDH wild type) and secondary (with IDH mutation) glioblastoma that are histologically indistinguishable, except by immunohistochemical expression and molecular diagnostics. Considering the diffuse infiltrative growth in brain structures, complete resection of the affected part of the brain is not possible which is a problem for bioptic sampling. Histopathological diagnosis is often conditioned by glioblastoma sample which is deficient and/or necrotic and that creates a problem in setting up diagnosis.

METODI

In this research we have used tissue samples from 32 patients operated on because of glioblastoma. Immunohistochemical analysis of glioblastoma tissues was made on 32 previously frozen samples and 32 unfrozen samples embedded in paraffin and made by TMA method. Antibodies were used on GFAP, S100, IDH1 and Ki-67. The research compared the quality of immunohistochemical reactions on both types of samples.

RISULTATI

The aim of the research was focused on comparison of the validity of immunohistochemical reaction on previously frozen glioblastoma tissues in comparison to unfrozen tissue embedded in paraffin, so that frozen tissue embedded in paraffin could be used for immunohistochemical staining in case that amount of subsequently obtained glioblastoma tissues is insufficient or if the subsequently obtained tissue was necrotic. The results of immunohistochemical analysis show that there is no significant difference in the quality of immunohistochemical reactions between both types of sample by comparing each antibody individually as with collective comparison of all antibodies.

CONCLUSIONI

The credibility of the results in this study is contributed to: application of TMA method , the use of validated method of immunohistochemical staining of tissue and validated antibodies, which reduces technical variability to minimum.

ID: 14888

ASCP BOC INTERNATIONAL CERTIFICATION & CMP

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[1] *ASCP Board of Certification*

INTRODUZIONE

For more than 20 years, the medical laboratory profession has been faced with numerous challenges at both the national and international levels. Key challenges confronting the laboratory profession include, but are not limited to: an aging workforce; a medical laboratory workforce shortage of qualified professionals; a lack of harmonization of medical laboratory education program curricula; increased mobility of laboratory practitioners who seek comparable employment outside their country of origin; and the need for international laboratory practice standards.

METODI

In 2006, the American Society for Clinical Pathology Board of Certification (ASCP BOC), the premier American laboratory certification agency, founded in 1928, began to formally address these problems within the newly created international certification option 'ASCPi'. This lecture will discuss the international certification examinations and Certification Maintenance Program (CMP) offered by ASCP BOC throughout the world. The ASCPi certification was designed in recognition of today's global demand for a reliable healthcare system that will preserve patient safety and will standardize and ensure excellence in laboratory practice globally.

RISULTATI

ASCPi serves as an important vehicle to foster international laboratory practice standards and promote a global and intercultural competent citizenry within the global laboratory workforce of the 21st century. In the lecture, the history of international certification will be discussed and the importance of ASCPi credentialing as it relates to quality improvement in the laboratory. Each of the specific certification categories will be outlined as well as the eligibility for these examinations. ASCPi information resources and instruction regarding the ASCPi certification and CMP processes will be discussed. Lastly, the lecture will provide ample time for questions and answers.

CONCLUSIONI

This presentation will provide the history and progress of ASCP BOC international activities along with an overview of the certification and Certification Maintenance Program processes.

ID: 14911

THE PITFALL OF THE EVALUATION OF ELEVATED CARDIAC TROPONIN VALUES

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INTRODUZIONE

Cardiac troponin (cTn) I and T are considered to reflect cardiomyocyte damage, so they are widely used to evaluate acute coronary syndrome (ACS). We occasionally encounter inconsistencies between the cTnI- and cTnT-based diagnoses or extremely high values for only one of the cTns. Although elevated levels of only cTnT have been demonstrated in patients with muscular dystrophy, there have been few reports of patients with only high cTnI levels. The objectives of this study were: 1) to identify the reason for the elevated cTnI value in one case without signs of typical ACS; 2) to determine the agreement between cTnI- and cTnT-based diagnoses; and 3) to compare the cut-off index (measured value divided by cut-off value; COI) of cTnI and cTnT.

METODI

In this study, 128 patients with both high-sensitive (hs)-cTnI (cut-off value, 26 pg/mL) and hs-cTnT (cut-off value, 14 pg/mL) measurements taken at the same points were enrolled. Immunoprecipitation was performed to detect IgG-cTnI (macro-cTnI). The hs-cTnI- and hs-cTnT-based diagnoses were compared, and the degree of agreement between the two was assessed by κ statistics. The COI of hs-cTnI and hs-cTnT were compared and assessed using Spearman's correlation coefficient.

RISULTATI

In the one case without signs of typical ACS, an immunoprecipitation study showed that the recovery of hs-cTnI was low (12.0%), indicating an extremely elevated hs-cTnI value compared to hs-cTnT due to the presence of macro-cTnI. There was moderate agreement between the hs-cTnI- and hs-cTnT-based diagnoses (concordance rate=78.9%; κ=0.530; p<0.001) in our cohort. The COI of hs-cTnI is positively correlated with that of hs-cTnT (R=0.786; p<0.001). However, in 15 patients (11.7%), the COI of hs-TnI had a more than five-fold difference from that of hs-cTnT. Among these 15 patients, only 2 patients showed signs of ACS.

CONCLUSIONI

Overall, the cut-off values for hs-cTnI and hs-cTnT were not equivalent. Furthermore, the COI of hs-cTnI and hs-cTnT differed drastically in 10% of the cases; this may have been due to the presence of macro-cTnI. Therefore, caution is needed when making a diagnosis in a case with an extremely high value for only one of the cTns.

ID: 14957

EKSPRESSION OF KI-67/P16 IN NORMAL, ATYPICAL AND NEOPLASTIC CELLS IN URINE CYTOLOGY

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INTRODUZIONE

To investigate the expression of the CINtecPlus (Roche) kit Ki-67/p16 in possible neoplastic urothelial cells in urine cytological specimens.

METODI

Urine cytological samples from normal controls (N=33), anonymous rest urine from samples diagnosed as suspicious or malignant (N=31), benign conditions (N=4), controls after treatment for UC (N=21) and newly diagnosed UC (N=32). Samples were fixed for 24 hrs in SurePath and then an unstained SP sample was prepared. Immunocytochemistry for ki-67/p16 dual staining kit was done on all specimens.

RISULTATI

8 newly diagnosed UC (all high grade) and 6 anonymous specimens showed dual positivity. None of the low grade UC and the control specimens after treated UC showed dual staining. Only 15/84 symptomatic cases were negative for both markers, whereas 59/84 showed positivity for both but not dual staining. 27/84 cases were positive for ki-67 (N=22) or p16 (N=5). Normal controls and known benign specimens were all negative for p16. The normal controls were also negativ for Ki-67, whereas 3 of 4 benign specimens expressed Ki-67, albeit at a low rate.

CONCLUSIONI

Coexpression of p16/Ki-67 in the same cells were only found in 16,6 % of the high grade cases, and thereby have no practical impakt as an aditional marker. Positivity for p16 alone strongly indicate malignancy, and consequently indicates follow-up with cystoscopy. Negative p16 with positive Ki-67 above 5 % can also indicate for cystoscopy as an aditional marker in primary diagnostics. Both markers, coexpressed and apart can give aditional information in urine samples diagnostics on follow-up patients after treatment for urothelial carcinoma.

ID: 14991

EPIDEMIOLOGICAL CHARACTERIZATION OF CTX RESISTANT ESCHERICHIA COLI ISOLATES FROM RETAIL CHICKEN MEATS IN JAPAN.

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INTRODUZIONE

Broad-spectrum ß-lactamases such as extended spectrum ß-lactamases (ESBL) and plasmid mediated AmpC (pAmpC) producing E. coli are resistant to extended spectrum cephalosporins, which was extensively used in clinical settings. Antibiotics are also used in livestock for infectious disease treatment and prevention. Use of antibiotics selects antibiotic resistant bacteria, and the bacteria are in turn spread to humans in recent years. The aim of this study is to compare the epidemiological characterization between the CTX resistant E. coli isolates from domestic and imported chickens in Japan.

METODI

Ninety-two chickens were purchased at supermarkets in Japan. The strain obtained from the chickens was isolated on MacConkey agar including 2μg/mL CTX. Antimicrobial susceptibility was evaluated by an agar plate dilution method with ABPC, CMZ, CTX, CAZ, CFPM, CPFX, GM, and AMK. The result of antimicrobial susceptibility was interpreted using the CLSI breakpoints. ß-lactamase genes and MLST were determined by the method described previously.

RISULTATI

CTX resistant E. coli was isolated from 56.6% domestic and 84.6% imported meats ($p<0.01$). The resistance rates of the domestic and imported samples were 56.8 and 45.6% for CAZ, and were 16.2 and 59.6% for GM ($p<0.001$). CTX-M-1, -55, -2, and -27 genes and CTX-M-2, and -8 genes were determined for the domestic and imported samples, respectively. The prevalence rate of CITM type was 35.1 and 29.8% in the domestic and imported samples. Moreover, 2 isolates of imported samples possessed both ESBL and pAmpC genes. The ST of isolates from domestic samples was diverse, whereas ST117 and ST38 were dominant in the strain isolated from the imported sample.

CONCLUSIONI

The results of our study reveal that imported retail chickens traded in Japan were contaminated significantly with CTX resistance E. coli. The genes of CTX-M-27 and -55 in the domestic samples, which confer resistance not only to CTX but also to CAZ, are often detected in clinical settings. In contrast, the higher resistance rate to GM of the strain isolated from imported chickens is suggested that the strain possesses not only ß-lactamase genes but also the resistance genes to other class antibiotics. Consequently, it is speculated that the antimicrobial resistant genes are spread from retail chickens to human.

ID: 15013

IDENTIFICATION OF PRE-CORE AND BASAL CORE PROMOTER MUTANTS IN PATIENTS WITH CHRONIC HEPATITIS B IN THE REPUBLIC OF MACEDONIA

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INTRODUZIONE

Background: Recent development of molecular techniques has improved our understanding of the role of various mutations of the HBV genome. Most common are mutations in the precore (PC) and basal core promoter (BCP) region, responsible for more serious course of chronic hepatitis.
Aim of the study: was to evaluate the prevalence of PC and BCP mutants in patients with chronic hepatitis B in the Republic of Macedonia.

METODI

Material and methods: Serum samples from 69 patients with chronic hepatitis B (47 males and 22 females, average age 49±20y.) were collected in the period from 2002-2012. All serum samples were tested for HBV, HCV and HDV infection and immediately frozen at -70#C. According to the HBeAg status, these patients were divided in two groups: HBeAg positive (15/69 pts or 21, 74%), and HBeAg-negative (54/69 pts or 78,26%).
Molecular examination including extraction and amplification of HBV DNA was performed. To establish if HBeAg-negative status is related to sero-conversion, or as a consequence of viral mutations, we have used INNO-Lipa hybridization assay from Innogenetics to identify the presence of mutations in precore and BCP region of HBV DNA. Molecular analysis was done in 38/54 HBeAg-negative patients (28 males and 10 females).

RISULTATI

Results: The prevalence of PC mutants in 84,21% (p=0,0000) and BCP mutants in 68,42% (P=0,0033) were extremely high in 38 examined HBeAg-negative patients. Combination of PC and BCP mutants was detected in HBV DNA of 25/38 HBeAg-negative patients (65,78%).

CONCLUSIONI

As a conclusion, HBeAg-negative stage was predominant in our patients with chronic hepatitis B and was related to mutations in PC and BCP region.
Key words: HBV, HBeAg, HBV DNA, RNA, PC, BCP, HCC, WHO, nt

ID: 15033

FEASIBILITY, DIAGNOSTIC ACCURACY OF TUBERCULOSIS USING XPERT MTB/RIF ASSAY: A STUDY TO COMPARE WITH TRADITIONAL ACID-FAST STAIN SMEAR

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INTRODUZIONE

The traditional Acid-Fast Stain smear is difficult to accurately differential diagnosis of Tuberculosis. The Xpert MTB/RIF assay (Cepheid, Sunnyvale, CA, USA) can detect tuberculosis and its multidrug-resistant form. We aimed to evaluate the diagnostic accuracy of the Xpert MTB/RIF assay for the detection of M. tuberculosis in sputum specimens and compare it with Acid-Fast Stain (Ziehl-Neelsen method). We want to shorten the initial time of treatment.

METODI

During a period of 36 months from August 2014 through August 2017, five hundred and thirty one clinically TB suspects were enrolled for Xpert MTB/RIF assay. Acid-Fast Stained smear microscopy, culture on LJ media and Xpert MTB/RIF assay were performed on sputum specimens from these patients. We assessed indicators of performance including sensitivity,specificity,positive predictive value (PPV) and negative predictive value (NPV).

RISULTATI

Among the 531 specimens, 126 (23.7%) were M. tuberculosis (MTB) detected by Xpert MTB/RIF assay, 152 (28.6%) were smear positive on Acid-Fast staining and 116 (21.8%) were positive on LJ cultures. The sensitivity of Xpert MTB/RIF assay vs. Acid-Fast Stain was 95.7% vs. 82.8% in culture-positive patients. The specificity of Xpert MTB/RIF assay vs. Acid-Fast Stain was 96.4% vs. 86.5%. The PPV of Xpert MTB/RIF assay vs. Acid-Fast Stain was 85.4% vs. 63.2%. The NPV of Xpert MTB/RIF assay vs. Acid-Fast Stain was 98.8% vs. 94.7%. We followed the medical records of patients with smear-negative, Xpert MTB/RIF test positive, they definitely became tuberculosis. We found that the patients with smear-positive, Xpert MTB/RIF test negative, their culture was Nontuberculous mycobacterium. The use of Xpert MTB/RIF assay also reduced time to start treatment from 10 days to 3 days.

CONCLUSIONI

To compare Xpert MTB/RIF assay with Acid-Fast Stain, the Xpert MTB/RIF assay is a highly sensitive and specific test for early and accurately differential diagnosis of Tuberculosis, especially in smear negative cases. This can shorten the starting day of treatment to avoid the diagnostic delay.

ID: 15048

ORDER OF DRAW PRACTICES IN VENOUS BLOOD SAMPLING AT CLINICAL BIOCHEMISTRY DEPARTMENTS IN THE DANISH HEALTH CARE SYSTEM

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INTRODUZIONE

Deviation in blood collection procedures is a central source of pre-analytical variation affecting overall analytical and diagnostic precision. The order of draw of venous sampling is suspected to affect analytical results, in particular for coagulation analysis. Here we compare the practices in venous blood sampling among clinical biochemistry departments to assess the uniformity of order of blood draw and adherence to international recommendations in the Danish health care system.

METODI

We collected venous order of draw guidelines from 49 clinical biochemistry departments at 22 public hospital units in Denmark. Guidelines were compared to the international recommendations by Clinical Laboratory Standards Institute (CLSI) and by World Health Organization WHO, and assessed in relation to department ISO 15189:2012 accreditation.

RISULTATI

We observed seven different order of draw guidelines related to citrate, serum, heparin, and EDTA tubes, and the use of discard tubes in relation to coagulation assays. 31 departments (63.3 %) were found to adhere to CLSI and WHO guidelines.
A majority of departments instruct the use of discard tubes before collection for coagulation assays in citrate tubes (44 departments; 89.8 %). The citrate tube was first in order of draw for most sites (35 departments; 75.5 %); and for non-citrate tubes the preferred order was serum-heparin-EDTA (36 departments; 73.5 %). Adherence to the CLSI and WHO guidelines was not associated with department ISO 15189:2012 accreditation ($p = 0.57$).

CONCLUSIONI

Venous order of draw practices are diverse at Danish clinical biochemistry departments, and show moderate adherence to international recommendations. Implementation of correct and standardized procedures inside and outside clinical biochemistry departments will presumably reduce the risk of test result errors, and furthermore increase the comparably of test results from one facility to another. Therefore, we recommend that higher compliance to international guidelines with regards to the order of draw should be prioritized in the future.

ID: 15065

MOLECULAR CHARACTERIZATION OF ROTAVIRUSES AMONG CHILDREN UNDER 5 YEARS WITH GASTROENTERITIS IN KENYATTA NATIONAL HOSPITAL, KENYA

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INTRODUZIONE

Severe diarrhea is common among children under five years worldwide and the major cause remains infection from rotavirus. It is estimated that rotaviruses cause 215,000 deaths annually worldwide. Around 200,000 deaths occur in Africa alone. Since the introduction of the rotavirus vaccine in 2014 in Kenya, there has been a significant decrease in deaths caused by rotavirus.
Objective
Molecular characterization of genotypes strains after the introduction of vaccine at KNH.

METODI

Materials and Methods
Study design: Cross sectional
Sample size: 355 participants (children< 5yrs).
Study area/site: Kenyatta National Hospital, Nairobi County which included Both Outpatient pediatric clinic and pediatric wards
Recruitment and consenting procedures: The children, both inpatient and outpatient less than five years old were identified through the hospital clinicians from the wards, consented by the same clinicians
Laboratory procedures: Stool samples were collected were tested by EIA, NSP3 qRT-PCR, one step multiplex qRT-PCR genotyping assay and to whole genome sequencing using next generation sequencing.

RISULTATI

Results
The statistical analysis by chi square showed no statistical significance of rotavirus infection between gender, inpatient and outpatients. The prevalence of rotavirus by EIA was 12.70% while qRT-PCR was 28%. There was high prevalence of G1, followed by G2, G3, and G9 while there were some mixed infection. The P type P8 was most prevalent followed by P4 and P6 although there were mixed P infection. The G-P combination showed that G1P [8] was more prevalent followed by G2P[4], G3P[6] and G9[P8]. There also some mixed infections.

CONCLUSIONI

The prevalence of Rotavirus was 12.7% and the most prevalent genotype was G1P[8].

ID: 15072

SPECIALIST CERTIFICATION FOR BIOMEDICAL LABORATORY SCIENTISTS IN NORWAY – 10 YEARS EXPERIENCE

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INTRODUZIONE

Specialist certification for biomedical laboratory scientists is an excellent opportunity for biomedical laboratory scientists (BLS) to advance their professional skills and academic interest. To obtain the title Biomedical Laboratory Scientist with Specialist Certification, the applicant must satisfy each of the following requirements; authorization as a BLS in Norway, membership in the Norwegian Institute of Biomedical Science (BFI), at least three years of relevant practice, 30 ECTS credits at Master's level, CPD for 100 hours as well as written and oral presentations and a short thesis within their chosen field of expertise. Certification must be renewed every five years, to ensure that the candidate is updated within their chosen field of expertise. The Specialist Certification programme was established in 2007, and in 2014, NITO BFI's Specialist Committee had approved 17 BLS' with Specialist Certification, which is a fairly low number. In 2015, BFI's Specialist Committee decided to start an active information strategy in order to increase interest for the Specialist Certification programme amongst Norwegian BLSs.

METODI

To improve information about the programme, several actions was taken. A member survey was sent out to 5236 members of BFI in September 2014. 1259 members replied. BFI's Specialist Committee arranged an information evening with counselling sessions in 2015, had an information stand at the National Congress of Biomedical Laboratory Science held in Oslo 2016.

RISULTATI

Due to the feedback of the member survey in 2014, some adjustments of the criteria was made, i.e. the previous requirement of 10 ECTS credits in Theory of Research Methods and Statistics was removed. After the Specialist Committee started their active information strategy in 2015, the committee has approved 25 BLS' with Specialist Certification. In total, 43 BLS' has achieved Specialist Certification and 14 has renewed their Specialist Certification.

CONCLUSIONI

The number of applicants for Specialist Certification is higher than ever and the interest among Norwegian BLS' to document their skills and work experience is growing, showing that the information strategy has worked.

ID: 15081

IS THE STANDARDIZED PROCEDURE OF 'HIRSCHSPRUNG' SPECIMENS A FOOLPROOF FORMULA FOR THE PATHOLOGY DEPARTMENT?

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INTRODUZIONE

Hirschsprung (megacolon) disease (HD) is a developmental colonic motility disorder in children, which is seen in about 5000 live born newborns (boys: girls up to 5:1). The disease is considered to be both embryonic developmental and genetic, caused by migration disorder of the neural crest cells from the cephalic to the alimentary tract region, resulting in the disability of intestine relaxation due to agangliosis. Consequently, these children suffer from obstruction, vomiting, poor fluid, electrolyte absorption and death if undiagnosed.
A standardized procedure for sampling and processing of HD suspect tissue specimens on a pathology department are essential for pathological diagnosis and patient follow up.
In want to present the standardized procedure protocol of the pathological department at the Oslo University Hospital-Ullevål.

METODI

1. HD material is registered as a CITO (high priority) specimen.
2. The biopsy is fixed in formalin.
3. Macroscopic cut-up and recording is preformed the day of reception, oriented on a corkboard with the mucous membrane facing up, measured, dried and ink marked on the serosa side. The colonic tissue is divided into cross-sections and oriented so the mucous membrane and serosa side is visible and the sample is then marked as 'Hirschsprung disease' and processed.
4. Tissue- Tek VIP 6 AI Vacuum infiltration processor is used for tissue prosessing.
5. The colonic tissue is embedded on the side like the macroscopic cut –up oriented, to make all the layers in the colonic tissue visible for the pathologist in the microscope.
6. The biopsy is sectioned with serial sections.
7. The first serial section is routine stained with HE. Serial sections are immunostained with S-100, synaptophysin and neuron specific enolase (NSE) to detect ganglion cells.

RISULTATI

Standardized protocols for suspected HD tissue specimens are important for improving consistency in embedding, handling of tissue and making serial sections to detect ganglion cells.

CONCLUSIONI

The protocol described here is optimized to enables correct diagnosis by the pathologist. This is critical for patients' surgical care, follow up and prognosis for later life.

ID: 15087

BASELINE NATIONAL SURVEY OF BIO-RISK MANAGEMENT PRACTICES: A GLIMPSE INTO THE BIOSAFETY AND BIOSECURITY SITUATION IN PUBLIC AND PRIVATE HEALTH LABORATORIES IN UGANDA

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INTRODUZIONE

Biosafety/Biosecurity has become a significant theme in global health security agenda (GHSA) mainly in the face of increasing laboratory capacity in the low and middle income countries. In Uganda, the magnitude of the infections and contamination arising from health laboratories remains largely unknown, but, the increased volume of biological samples exchanged between laboratories through the 'national sample and result transportation network', and re-emergence of infectious agents presents an imminent biosafety and biosecurity threat. Thus, Uganda was among the phase-1 prioritized country within the GHSA document to develop an interagency roadmap for establishing robust biosafety and biosecurity systems and networks. As a future reference, Uganda National Health Laboratories Service-Ministry of Health conducted a baseline assessment of 210 laboratories across both public and private public health laboratories, Military and veterinary laboratories nationwide.

METODI

A standardized score based questionnaire was purposively administered to biosafety officers, lab managers, lab personnel and facility in-charges to assess 17 key elements of biosafety biosecurity implementation status across multisectoral laboratories.

RISULTATI

Overall, national BRM performance was at 33%. Government and private laboratories scored 33 and 34% respectively. Out of 210 facilities, 35% had documented mandate to enforce safety practice both at the facility and laboratory level. National compliance of other key sections to the standard were as follows; laboratory premises and physical security-30%, storage and sanitation facilities-40 & 18% respectively. laboratory biosecurity-29%, chemical hazards management-26%, availability & use of PPE-38%, established and functional occupation health and safety programs-39%, safety equipment and maintenance-15%, waste management-53%, infectious materials management and accountability-46% and documentation-28%.

CONCLUSIONI

All laboratories assessed were below average (31 – 49%) hence at high biosafety and biosecurity risks. Ministry of Health and implementing partners need to focus on key strategic areas like tripartite training, onsite mentorships and revise lab infrastructure guidelines.

ID: 15092

INTERNATIONAL TRAINEE INVITATION PROGRAM IN TMER, JAPAN. PART III

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INTRODUZIONE

The Tsukuba Medical Laboratory of Education and Research (TMER) is mainly engaged in supporting the education, development, and training of Medical Scientists and Medical Technologists. The University of Tsukuba Hospital and LSI Medience Corporation established TMER to promote research and development based on collaboration between industry and academia. TMER has held The International Trainee Invitation Program every year since 2011, receiving clinical laboratory scientists from various countries for training in medical laboratory technology, with the joint aims of contributing to the improvement of the level of medical care in the trainee's home countries, and building mutually beneficial international friendships.

METODI

We recruited participants for the project from all over the world. Through the selection process in IFBLS and TMER, we determined one or two trainees to invite per year. In the training schedule, they took lectures from specialists, and then, did practical skill lessons in the laboratory, talking the difference in the way to perform our jobs each other.

RISULTATI

In these 7 years, we received 9 trainees from different countries; Taiwan, Canada, Sri Lanka, Cameroon, Nigeria, Greece, Philippines, Italy and Zambia. They completed subspeciality training in each program in each year.

CONCLUSIONI

The training program has been very successful so far. Participants have not only gained knowledge and technical skill, but also made new discoveries through exchange and dialog with fellow participants and TMER staff. With the help of all those concerned, we intend to continue holding and developing this program in the future.

ID: 15112

ESTABLISHING A NEW REMOTE EDUCATION SYSTEM VIA INTERNET ON HEMATOLOGICAL CELL MORPHOLOGY BETWEEN JAPAN AND CAMBODIA.

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INTRODUZIONE

In hematological cell morphology, individual practices under good quality tutorial are important and essential as it is one of the fields that students find difficult. However, especially in developing countries, there is a limitation to find experts who can give students a high quality education for hematological morphology. This study demonstrates a new remote education system that Japanese experts can provide Cambodian students a high quality education using WebPro provided by CellaVision via the internet.

METODI

After the research was explained, 68 third-year Cambodian students who completed lectures and practical trainings in hematology volunteered to participate in this study. First, they attempted an offline test (pre-WebPro test; 30-cell classification, including immature cells) prepared by Japanese experts. After a week, the students took the first WebPro test (Test 1), which was prepared by the experts. After Test 1, the students reviewed and compared the correct answers which were sent by the experts and their results, and studied by themselves on WebPro for a week until the second WebPro test (Test 2). One week after taking and reviewing Test 2, the students attempted another offline test (post-WebPro test; similar classification to the first test). The effects of learning using WebPro were evaluated using the pre- and post- WebPro test results.

RISULTATI

Of the 68 students, 61 (89.7%) attempted Test 1 and 63 (92.7%) attempted Test 2. Sixty-two (91.2%) and 56 (82.4%) students attempted the pre- and post-WebPro tests, respectively. In other words, 49 (72.1%) students attempted all tests. Among these, the average correct answer score of the offline test was higher in the post-WebPro test (mean ± SD: 49.6 ± 13.2) than that in the pre-test (34.6 ± 9.4). The score of the offline test significantly increased after using WebPro (t-test: $p < 0.0001$). Which the individual score on pre-test is taken as 100%, The lowest and highest score improvement rates on offline test were 73 and 250%, respectively. Similarly, the average score of the WebPro test was higher in Test 2 (50.9±17.0) than that in Test 1 (43.8±10.6) (t-test: $p < 0.005$).

CONCLUSIONI

Using this system via the internet, wherever students are, they can repeatedly self-learn using cell images, attempt tests that provided by the experts of hematological cell morphology and also can communicate with the experts. This new remote education system will help to solve typical problem of cell morphology education where there is no experts.

ID: 15123

QUANTITATIVE PROTEOMIC APPROACH TARGETED TO FIBRINOGEN β CHAIN IN TISSUE GASTRIC CARCINOMA

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INTRODUZIONE

Elevated plasma fibrinogen levels and tumor progression in patients with gastric cancer (GC) have been largely reported. However, distinct fibrinogen chains and domains have different effects on coagulation, inflammation and angiogenesis. The aim of this study was to characterize fibrinogen β chain (FGB) in GC tissues

METODI

Retrospectively we analysed the data of matched pairs of normal (N) and malignant tissues (T) of 28 consecutive patients with GC at diagnosis by combining one- and two-dimensional electrophoresis (1DE and 2DE) with immunoblotting and mass spectrometry together with two dimensional difference in gel electrophoresis (2D-DIGE).

RISULTATI

1DE showed bands of the intact FGB at 50 kDa and the cleaved forms containing the fragment D at ~37-40 kDa, which corresponded to 19 spots in 2DE. In particular, spot 402 at ~50 kDa and spots 526 and 548 at ~37 kDa were of interest by showing an increased expression in tumor tissues. A higher content of spot 402 was associated with stomach antrum, while spots 526 and 548 amounts correlated with corpus and high platelet count (>208x109/L).

CONCLUSIONI

The quantification of FGB and cleaved products may help to further characterize the interconnections between GC and platelet/coagulation pathways

ID: 15124

CHARACTERIZATION AND VERIFICATION OF THE INDETERMINATE HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 WESTERN BLOT PATTERNS

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INTRODUZIONE

The Western blot (WB) is the most commonly accepted as a serological confirmatory test for the detection of antibodies to human immunodeficiency virus type 1 (HIV-1). However, some WB results can be interpreted as indeterminate or positive according to different criteria, and the discordances might impede early diagnosis of HIV-1 infected patients. The present study aimed to compare the interpretation of WB results between different criteria, and to verify the HIV infection status using real-time RT-PCR.

METODI

A total of 196 serum samples obtained from the 178 patients with suspected HIV infection were tested by WB using the HIV1/2 BLOT 2.2 (MP Biomedicals, Singapore). The results were interpreted according to following criteria: Centers for Disease Control (CDC), American Food and Drug Administration (FDA), Center Nationale Transfusion Sanguine, World Health Organization (WHO), Consortium for Retrovirus Serology Standardization, and American Red Cross (ARC). In order to provide the virological confirmation of HIV infection status, the plasma samples collected from 115 patients were tested by real-time RT-PCR. The time intervals between collection of WB and real-time RT-PCR samples from the follow-up patients were less than 2 weeks.

RISULTATI

The WB strips were interpreted using different criteria, which included 90-118 positive, 22–50 indeterminate, and 56 negative results. For the indeterminate WB using WHO criteria, there were seropositive for gp160 (12%), gp120 (8%), gp41 (4%), p24 (96%), and p17 (20%). There were 6 banding patterns of indeterminate WB results using WHO criteria: p24 (72%), p17/p24 (4%), p17/gp160 (4%), p24/gp160 (8%), p17/p24/gp41 (4%), and p17/p24/gp120 (8%). Among the follow-up patients with positive real-time RT-PCR results (>50 copies/mL), the WB results of 2 cases were positive by WHO criteria but indeterminate by CDC criteria; on the other hand, the WB results of 4 cases were positive by CDC criteria but indeterminate by WHO criteria.

CONCLUSIONI

For the patients with indeterminate WB results, combined interpretation of the results using multiple criteria may improve laboratory detection of HIV-1. In addition, the patients with discordance WB results are suggested to perform real-time RT-PCR for early diagnosis of HIV-1.

ID: 15204

INTERCHANGEABILITY OF PROCALCITONIN MEASUREMENTS USING THE POINT OF CARE TESTING ICHROMATM READER AND THE AUTOMATED KRYPTOR INSTRUMENT

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INTRODUZIONE

Early detection of infection is pivotal and 24-hour availability of procalcitonin (PCT) could help to improve the treatment of critical patients. A point-of-care-testing (POCT) for the PCT could be a desirable solution, especially in an emergency unit. Due to the fact that PCT is usually trend-evaluated, if PCT can be performed both urgently and in routine, the interchangeability of the PCT using POCT and those using the central routine laboratory instruments is mandatory. The aim of this study was to verify if PCT made by using the new POCT ichromaTM are interchangeable with those of Kryptor instrument.

METODI

117 serum samples were processed sequentially on Kryptor and ichromaTM. Passing-Bablok regression tested the linear relationship between the measurements, and the Bland-Altman test estimated the consistency of the methods. The acceptance limits for the bias% were defined a priori. Cohen's Kappa statistic calculated the concordance at the clinically relevant cutoffs (0.25; 0.50; 2.0; and 10 ng/mL).

RISULTATI

PB regression did not show a significant deviation from linearity (Cusum linearity test:$p > 0.10$) while proportional and constant differences were observed. The mean bias% was within the desirable quality specification for TE (< 20%) but the 95%CI was very large, exceeding both TE specification and the clinical reference change value.
However, even though the agreement between ichroma™ and Kryptor values at the clinical relevant cutoff of 0.25 ng/mL was moderate (0.25 ng/mL: κ = 0.725 (95%CI: 0.532 to 0.917), the agreement at 0.50 ng/mL: (κ = 0.878 (95%CI: 0.774 to 0.982), 2 ng/mL:(κ = 0.983 (95%CI: 0.949 to 1.016) and 10 ng/mL: (κ =0.938 (95%CI: 0.869 to 1.007) was strong.

CONCLUSIONI

Our data suggest that ichroma™ is not interchangeable with Kryptor, so cannot be mixed with either for patient monitoring. However, the concordance at the clinical relevant cutoffs allows ichroma™ to be considered a suitable option to Kryptor because the differences between the results do not essentially lead to a different diagnosis or classification of disease severity. However, the ichroma™ lack of strong agreement at cutoff of 0.25 ng/mL recommends caution in the interpretation of the data around this cutoff.

ID: 15216

IMPLEMENTATION AND EVALUATION OF FLIPPED LAB-ROOM AS A PEDAGOGIC METHOD IN TEACHING A LABORATORY COURSE

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INTRODUZIONE

Purpose/ aim: The purpose of this abstract is to present and evaluate the implementation of Flipped Lab Room (FLR) concept at a laboratory course.
BACKGROUND
As a teacher at the biomedical laboratory science program, I am always interested of enhancing the quality of my teaching in order to improve the educational learning outcome of students attending my courses. The use of student active pedagogic methods such as flipped classroom contributes to achieving an improved learning outcome. Though this method is well documented and evaluated in theoretical courses, I was interested in testing a modification of this method while teaching laboratory courses where learning and mastering practical skills is essential.
This abstract is about a modification of the well- acknowledged Flipped Class Room concept educational method. Flipped lab room implementation was at a laboratory course in transfusion medicine. The students at this course were 3rd year students at the Biomedical laboratory Science program at the Norwegian university of technology and science in Aalesund. The students at this course will also take a practical passing test at the end of this course.

METODI

The FLIPPED LAB ROOM (FLR) method consisted of three main parts. The first part was the presentation of videos, and theory of laboratory experiment prior to course on Blackboard, which is the university`s educational leaning system. The second part was the practical carrying out of the laboratory experiment. The third part was that the students had to answer a set of obligatory questions instead of handing out a traditional laboratory report. The implementation of the FLR evaluation was done using an electronic survey consisting of 12 questions.

RISULTATI

There were 18 students attending this course in fall semester 2016. 17 students have answered the online survey.

CONCLUSIONI

Good evaluation of FLR, one can conclude that this method contributes to the increase of learning outcome as an essential indicator of educational quality. FLR is therefore recommended used at teaching in other laboratory courses. Further evaluations and modifications of this method will be tested.

ID: 15230

IMPACT OF THE THERAPEUTIC DRUG MONITORING OF THE NEWER ANTIEPILEPTIC DRUGS (AEDS) ON THE MANAGEMENT OF SEIZURE PATIENTS AT A LARGE ACADEMIC MEDICAL CENTER

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INTRODUZIONE

Epilepsy is a common, serious, and potentially life shortening neurological disorder, the symptoms can be successfully treated with one or more antiepileptic drugs (AEDs). Therapeutic drug monitoring (TDM) can help establish an individual's optimal plasma concentration range and become valuable in treatment of epilepsy since it is difficult to determine the optimal dose on clinical ground only. Pharmacokinetic variability for AEDs include food, co-medication, gender, age, pregnancy, hepatic or renal failure and genetic factors. The objective of this paper identifies newer AEDs monitoring enables more effective treatment of therapy and disease management.

METODI

The therapeutic drug monitoring of nine newer AEDs have been established with LC-MS/MS methods in our CGMH clinical laboratory, including Gabapentin, Lacosamide , Lamotrigine, Levetiracetam, Oxcarbazepine, Perampanel, Pregabalin, Topiramate, Zonisamide. Over eight month period, a total of 373 AEDs TDM levels determinations from 227 patients with epilepsy were included to analyze the reasons and clinical outcomes of TDM in our large academic medical center.

RISULTATI

The majority (87.6%) reason for blood level monitoring of AEDs is pharmacokinetic variability, then confirm compliance (6.4%) and 6% for pregnacy. Overall , 185 patients (81.5 %) with new AEDs blood level determination have a better outcomes including 66.3% of patients decrease seizure occurs, 8% of patients decrease the side effects of AEDs.

CONCLUSIONI

Based on the multi-disciplinary cooperation with pharmacists, neurologists and laboratories, we confirm the benefits of AED blood level monitoring. TDM plays a valuable role for patients treated with new AEDs.

ID: 15244

DIGITAL PATHOLOGY LEARNING PLATFORM FOR LAB TECHNICIANS: ACQUIRING EXPERIENCE FROM TECHNICAL ERRORS.

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INTRODUZIONE

Digital pathology is widely used for teaching medical students and residents and for in-training and certification in pathology. The application of digital pathology in the learning program of lab technicians, however, is more limited. The aim of the study was to improve authentic learning by the use of virtual slides representative of clinical cases with technical errors and develop associated real world problem solving approach.

METODI

21 lab technicians were asked to complete a questionnaire consisting of 9 multiple choice style questions, each associated to 11 virtual slides (haematoxylin and eosin stain as well as immunohistochemical analyses) representative of different technical errors (embedding, processing, cutting, conventional and immunostaining). In the digital pathology web portal of the University of Florence, participants logged with username/password. The Slide Seminar included virtual slides and allowed the attachment of additional images and documents of different formats (.jpg; .pdf, .docx, .txt) to cases, specimens, or single virtual slides.

RISULTATI

Visualization of virtual slides was considered satisfactory and participants easily familiarized themselves with the web platform recognizing patterns of tissue injury and correlating them with the respective error. The associated questionnaire allowed the identification of the crucial errors and the open discussion on the corrective feed-back, including analysis of the reasoning leading up to the mistake. Users were able to discuss some practical tips on the correct technical procedures. Aside from the direct benefit to learners, valuable information was gained from errors, and error tolerance encouraged participants' active, exploratory, generative engagement. Such practical learning approach improved social cohesion and enhanced creativity and innovation. Upon final discussion, participants had the opportunity to re-view the digital images and in parallel download related information of added teaching value.

CONCLUSIONI

Through the use of virtual slides, lab technicians improved their capability to correlate visual images of errors to technical procedures. The added value was that users were confronted with real examples of their professional practice and stimulated to develop proper corrective feed-back competencies.

ID: 15289

EVOLUTION OF HELICOBACTER PYLORI IN THE GASTRIC NICHE OF PATIENTS AT INCREASED GASTRIC CANCER RISK

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INTRODUZIONE

Histopathological changes in gastric mucosa during Helicobacter pylori (HP) infection can be associated with HP fitness adaptation through genetic events leading o reduced virulence as precancerous lesions develop. In this study we dissected the heterogeneity of the HP genotypes in patients (pts) at higher gastric cancer (GC) risk to understand if they exploit an increased genetic stability and consequent virulence.

METODI

14 Autoimmune Gastritis (AG), 25 First Degree Relatives of GC pts (FDR), 39 GC and 13 Dyspeptic pts without familiarity (D) were investigated. Gastric biopsies were grown in HP selective medium; HP was identified by standard methods. As representation of HP strain heterogeneity, 10-12 colonies-forming-unit (CFU)/pt were isolated and analyzed by PCR. A total of 915 CFU were examined. Three CagPAI loci (cagA, cagE, virB11) were studied as proxy marker of CagPAI plasticity. VacA s, i and m regions, homB/A alleles were also evaluated as markers of additional virulence. A stable CagPAI was defined by simultaneous presence of virB11, cagE, cagA genes in ≥9 isolated CFU/pt. Increased virulence was determined with ≥9CFU with vacA s1i1mx aplotype (vs. sxi2m2 or vacA deletion) or ≥9CFU with homB gene. Histological grading of gastritis was made by Sidney system. OR and 95% confidence intervals (C.I.) were calculated.

RISULTATI

AG and FDR showed younger age when compared to GC. FDR status was associated with significant higher atrophy (OR=6.3, 95%C.I.:1.2-31.9) and neutrophil infiltration (activity) (OR=7.2, 95%C.I.:1.2-44.7) than D, while metaplasia and mononuclear cell infiltration were comparable. Virulence was increased in the niche of FDR vs. AG as shown by the slightly higher risk of CagPAI stability (OR=2.3, 95%C.I.:0.6-9.4) and significant association with vacA s1i1mx (OR=4.4, 95%C.I.:1.1-18.4). No difference in the distribution of homB was noticed.

CONCLUSIONI

Although the presence of higher levels of atrophy than D, FDR harbour HP strains with a relatively stable CagPAI and show high acute inflammation within the niche. Being equal atrophy, the relevance of the virulent vacA aplotype is superior in FDR than AG, suggesting a different evolution of bacterial genetic background in the niches of different risk groups.

ID: 15296

DYNAMIC CHANGES OF SERUM HLC IGG, IGA, AND IGM KAPPA AND LAMBDA AFTER LIVER TRANSPLANTATION IN THE RELATIONSHIP TO PRETRANSPLANT ELF SCORE

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INTRODUZIONE

Increased serum IgA concentrations in liver fibrosis indicate decreased prognosis of the patient. Increased ELF score (Siemens, calculated from serum concentrations of hyaluronic acid, HA; N-terminal propeptide of procollagen III, PIIINP; and tissue inhibitor of metalloproteinase 1, TIMP-1) is a predictor of fibrosis severity. Immunosuppressants used after liver transplantation decrease the immune response, both cellular and humoral. The aim was to study the relationship between serum immunoglobulin heavy/light chain pairs (HLC) of immunoglobulins G, A, and M (HLC IgA, IgG, IgM kappa and lambda) and pretransplant ELF score and to evaluate dynamic changes of HLC after liver transplantation (LTx) during 3 years of follow-up.

METODI

A total of 117 patients was recruited during a period of 36 months. Serum samples were taken before Tx (ELF score, HLC), on the 1st, 2nd, and 3rd year after LTx (HLC IgG, IgA, IgM). HA, PIIINP, and TIMP-1 were measured on Siemens Centaur XP analyzer and ELF score was calculated by formula 0.846*ln(HA) + 0.735*ln(PIIINP) + 0.391*ln(TIMP-1) + 2.494. HLC IgG, IgA, and IgM (The Binding Site) were measured on Optilite analyzer (The Binding Site).

RISULTATI

The median od pretransplant ELF score was 12.4, interquartile range (IQR) 11.8-13.0. The pretransplant medians (IQR) of HLC IgA kappa, HLC IgA lambda, HLC IgG kappa, HLC IgG lambda, HLC IgM kappa, and HLC IgM lambda were 3.7 (2.5-5.2), 2.9 (2.0-3.9, 10.4 (8.5-13.4), 5.9 (4.6-7,7), 1.1 (0.7-1.9), and 0.7 (0.4-1.1), respectively. Highest concentrations of both pre-LTx HLC IgA kappa and lambda were in the 3rd tertile of ELF score (both $p<0.01$). HLC IgA, IgG, and IgM kappa and lambda decreased during the first post-LTx year, maximal decreases were in the 3rd tertile of ELF score ($p<0.05$ for all). Ratios of HLC IgA, IgG, and IgM kappa/lambda was above 1 in more than 90 percent of patients before, +1 and +2 years after LTx.

CONCLUSIONI

The increased concentrations of HLC IgA kappa and HLC IgA lambda were positively correlated to the pretransplant ELF score. All HLC pairs decreased significantly after LTx. The clinical relevance of these significant changes should be further studied.

The work was supported by the Ministry of Health of the Czech Republic (grant number: AZV MZ 15-27579A).

ID: 15309

DAILY VISION OF THE APPLICATION OF ANTEL'S CODE OF ETHIC

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INTRODUZIONE

Starting from the national regulations governing each of Italian health profession, specifically DM 745/94 for Biomedical Laboratory Scientist, in 2010/2011 Antel has drafted its Confederal Code of Ethic. This code is the set of rules, principles and habits of self-discipline to which the BLSs must inspire themselves in the exercise of the profession, to protect people, collectivity, decorum and professional dignity. It is a guarantee in case of abuse or lack of exercise of the profession, independently from the type of contract of employment, and each BLS is required to know these rules, since the Ignorance of them does not exempt from disciplinary responsibility.

METODI

The code is divided into numerous articles, which summarize and clearly expose not only the common rules dictated by the law, but also good rules of conduct and respect both in the workplace and in the relations with other professional figures within the National Health Care System.

RISULTATI

Every day, BLSs respect their responsibilities and professional duties trying to honor with consciousness and autonomy the qualification that belongs to them: the priority objective is the respect of the person without distinction of gender, age, ethnicity or any other characteristic. The BLSs carry forward the profession by founding their own actions on scientific knowledge, observing ethically and morally irreproachable behavior. They are obliged to respect the professional secrecy and the confidentiality of the patient’s personal data. The Biomedical Laboratory Scientist cooperates with other professional figures, respecting their own skills and competencies. The responsibility of the analytical result is fundamental, especially following the entry into force of the "Gelli" Law n° 24/2017.

CONCLUSIONI

In order to carry out with responsibility, competence and professionalism their work, BLSs are required to follow courses of never-ending education, maintaining their practices in step with scientific and technological progress.

ID:15348

BUFALIN ENHANCES IMMUNE RESPONSES IN WEHI-3 CELLS GENERATE LEUKEMIA MICE THROUGH ENHANCING PHAGOCYTOSIS OF MACROPHAGE AND NATURAL KILLER CELL ACTIVITIES IN VIVO

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INTRODUZIONE

Bufalin, a component from bufadienolides present in Chinese medicine Chan Su, has been shown to induce cancer cell apoptosis in many human cancer cells including human leukemia cells but bufalin has yet shown effects on immune responses in a leukemia mouse model. Herein, we investigate bufalin effects on the immune responses of WEHI-3 cells generated leukemia murine in vivo.

METODI

In the first place, we used normal BALB/c mice i.p. injected with WEHI-3 cells to develop the leukemia mice and then these leukemia mice were individually treated with bufalin once in a two days by oral at various doses (0, 0.1, 0.2 or 0.4 mg/kg) for 15 days. At the end of treatment, all mice were weighted, blood, liver and spleen tissues were collected for cell markers, phagocytosis, NK cell activities and T and B cell proliferation analysis were evaluated by using flow cytometric assay.

RISULTATI

Results indicated that bufalin treatment did not affect body and spleen weights but decreased liver weights, bufalin also decreased T, B and Mac-3 cell markers at 0.4 mg/kg but did not significant affected the cell marker of monocytes. Furthermore, macrophage phagocytosis activity was increased by bufalin treatment (at 0.4 mg/kg from PBMC and at 0.1 mg/kg from peritoneal cavity, respectively).and bufalin increased NK cell activities at 50:1 (Target cells:splenocytes). Bufalin at 0.1 and 0.2mg/kg increased B cell proliferation but only at 0.2 mg/kg can bufalin increased T cell proliferation. In serum biochemical markers analysis, bufalin may ameliorate LDH levels but deteriorate liver on account of elevation in GOT and GPT values.

CONCLUSIONI

Taken together, bufalin modulates immune responses in WEHI-3 cells generate leukemia mice through enhancing macrophage phagocytosis and natural killer cell activities in vivo.

ID: 15353

ETHICAL ARTICLES USED AS A TOOL IN PROMOTING DEBATE AND DISCUSSIONS.

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INTRODUZIONE

For several years The Norwegian Committee of Professional Ethics (YER), NITO The Norwegian Institute of Biomedical Science, has had a regular ethics column in The Norwegian Scientific Journal for Biomedical Laboratory Scientists, Bioingeniøren. The authors of this column are the members of YER.

METODI

Each one of us is responsible for contributing an article approximately twice a year. We are free to choose our topic as long as it is ethics or professional ethics related. The topics vary from ethical issues we find interesting on a personal level to ethical dilemmas at our workplace and in our society. Once the article is written, it is submitted to the editor for evaluation before publication.

RISULTATI

We have reviewed and grouped the last 56 articles (2012 – 2017). The articles are grouped in the following categories: Working environment, Biomedical Laboratory Scientist, patient care (19), professional ethics and ethical reflection (6), The Biotechnology act, research, future development
(19), and miscellaneous, general every day ethics (12).
The articles are published in the journal and posted on social media. Our aim is to reach as many as possible.
We can count the number of "likes", but we have no way of measuring the impact the ethics column has on the workplace conversations or the influence it has on each member. That is why we have chosen not to show any statistics.

CONCLUSIONI

We find that writing ethical articles can be a useful tool in promoting debate and discussions in the workplace. By challenging our members to think and reflect over what they do, how they do it and why they do it, may lead to a change in their personal life and workplace environment as a consequence. Good practice occurs, when there is a conscious thought about the how, the why and the when.

ID: 15358

QUALITY IMPROVEMENT IN AZIENDA OSPEDALIERO UNIVERSITARIA CAREGGI (AOUC)

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[3]*AOUC SOD Diagnostica Genetica*
[4]*AOUC UOC Fisica Sanitaria*

INTRODUZIONE

In healthcare facilities there is a continuous and rapid improvement of techniques and technologies. This involves the need for certification and accreditation, to guarantee patients about the quality of care. Medical departments and surgical rooms are perceived as critical from general public, but the quality level of all healthcare facilities has the same importance. The AOUC, having “quality improvement” as one of the main goals, devised a strategy.

METODI

First of all, a dedicated unit, called “Accreditation, Quality and Risk Management”, was created, reorganizing two units which separately managed total quality management and clinical risk management. Secondly, quality was promoted by the widespread dissemination of ISO 9001 certification to hospital Departments and finally, other initiatives of accreditation, focused on professional competences, have been realized:

RISULTATI

• ISO17025 accreditation for forensic genetics that started when Italy joined the Prűm Decision concerning forensic DNA’s analysis and fingerprints. Thus, according to this legislation and with the general rules of the EU Council with the necessity of the accreditation for the forensic laboratories, this standard was reached in the 2012 (Lab n. 1268 Accredia) and is still running;
• ISO17025 accreditation for personal dosimetry. It is required by the European Directive 59/2013, related to the protection of workers from the dangers of ionising radiation. Accreditation was achieved in 2016 (Lab n. 1591 Accredia) and it is still running;
• ISO17043 specifies general requirements for the competence of providers of proficiency testing schemes (PTP) and for the development and operation of proficiency testing schemes. PTP are requested to operate in order to be supportive for medical laboratories willing to be accredited by the ISO 15189:2012 "Medical laboratories - Requirements for quality and competence” which is considered the European Quality standard. Accreditation was achieved in 2016 (PTP n. 0013 Accredia).

CONCLUSIONI

The pursuit of these not mandatory accreditations shows the hospital focal interest for the increase of quality and involvement of operators. In our experience, applying the high-level ISO standards had a positive impact not just on the specific activities, but also on the Organization as a whole.

ID: 15361

IMPACT OF MICROBIAL TRANSLOCATION AND SYSTEMIC INFLAMMATION ON IMMUNE RECOVERY IN HIV-RELATED LYMPHOMA PATIENTS TREATED WITH HIGH-DOSE CHEMOTHERAPY PLUS AUTOLOGOUS STEM CELL TRANSPLANTATION

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INTRODUZIONE

Gut dysbiosis can affect cancer therapies outcome while oncologic treatments lead to systemic inflammation (SI), gut barrier deterioration and microbial translocation (MT). The impact of MT-SI on immune recovery in immunocompromised patients submitted to intensive CT is unexplored. This retrospective study focuses on the impact of MT on CD4 T cell recovery and thymic output in HIV+ patients with lymphomas after first line CT (CT_I) submitted to debulking CT (DCT) and high dose CT (HDC) plus autologous stem cell transplanatation (ASCT).

METODI

24 relapsed/refractory HIV+ lymphoma patients after CT_I, with lymphoma remission for at least 3 years from DCT and HDC plus ASCT were studied. 16S rDNA, sCD14, signal joint TCR receptor excision circles (sjTRECs) were measured as markers of MT, SI and thymic output, respectively. Immunological-responder (IRs) and non-responder patients (INRs) were defined taking into account CD4 normal range. Nonparametric statistical analysis was used to compare continuous variables.

RISULTATI

Median follow-up was 7.4 yrs (range 3-13.8 yrs). IRs at the last visit were 50%. After CT_I (T0), 16S rDNA, sCD14 and sjTRECs levels were comparable between INRs and IRs, CD4 were lower in INRs compared to IRs (p=0.001). After DCT plus G-CSF, a significant reduction in 16S rDNA levels in IR (p=0.02), slight reduction of CD4 T cell counts and stability of sCD14 in both groups were observed. CD4 T cells reached their nadir 15 days after ASCT while 16S rDNA levels increased (overall, 0 cp/mL vs. 66 cp/mL, p=0.04). This was associated with an increase in mucositis and enteric complicances. Three years after ASCT, CD4 and sjTRECs increase was low in INRs (+55%, +42%) and high in IRs (+110%, +716%). In INRs, T0-sCD14 correlated with CD4 recovery until 36 months after ASCT (r=-0.77, p=0.02); positive correlations were observed with 16SrDNA. TM-SI didn't influence thymic output

CONCLUSIONI

MT-SI may delay immune reconstitution after intensive CT in patients with severe lymphopenia. In this scenario, CD4 T cell recovery in the long term follow-up can be fostered by antigen-dependent T cell expansion rather than synthesis of naïve CD4 T cell from thymus

ID: 15373

COMPARISON OF THE TIME TO DETECT MTBC BETWEEN THE INITIAL DIAGNOSIS AND FOLLOW-UP SPECIMENS IN MYCOBACTERIAL CULTURES

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INTRODUZIONE

For initiating effective treatment and prevent ongoing transmission of tuberculosis, the laboratory is given the responsibility to provide quick and correct results. Culture is the standard method for identification of Mycobacterium tuberculosis complex (MTBC). Centers for Disease Control in Taiwan listed the “MTBC cultured and identified within 28 days” as a quality control indicator. Without process or staff change, this indicator had large variation in our laboratory. The aim of this study is to clarify the variations mainly due to improper workflow or specimen characteristics.

METODI

The achievement rate of "MTBC cultured and identified within 28 days" were analyzed at the initial diagnosis (group 1) and follow-up (group 2) specimens quarterly in 2016 to 2017, separately. Student's t-test was used to compare the results within these two groups.

RISULTATI

A total of 55,275 mycobacterial culture specimens were received between 2016 and 2017. There were 2,900 MTBC were identified, 1541 (53.6%) isolates from group 1 and 1,359 (46.4%) ones from group 2. In group 1, the results of the indicator were 85.3%, 87.1%, 90.0%, 89.8%, 84.4%, 87.6%, 88.1%, and 84.9% quarterly. In group 2, they were 68.2%, 71.1%, 65.9%, 82.9%, 53.6%, 68.4% , 56.2%, and 60.7%, respectively. The mean±SD were 87.2%±2.1% in group 1 and 65.9%±9.3% in group 2. Significant differences were observed within these two groups ($p < 0.05$).

CONCLUSIONI

The group 1 achievement rate of the indicator "MTBC cultured and identified within 28 days" was better than group 2, and the group 1 had less variation. It can be inferred that the main factor that affect the performance is the source of the specimens, from initial diagnosis or treated tuberculosis patients. Calculated the indicator just from initial diagnosis specimens may be objective than it from all specimens.

ID: 15388

BIODIGI - DIGITAL STUDY PORTAL FOR BIOMEDICAL LABORATORY SCIENCE

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INTRODUZIONE

In the BioDigi project we will create a digital study portal containing twelve key study modules of the Degree Programme in Biomedical Laboratory Science to be used by the participating Universities of Applied Sciences (UAS). The material producing in English for the benefit of international student exchange and education export. The project is carried out between years 2017-2019.The aim is to increase the shared courses offering and cooperation of UASs that train Biomedical Laboratory Scientists. The objectives include promoting equality and parity, flexible study paths, and enabling students to speed up their studies. Moreover, online studies provide a learning environment where students can develop their collaborative learning skills, share their knowledge, and learn together. Partners: Metropolia University of Applied Sciences, Novia University of Applied Sciences, Savonia University of Applied Sciences, Turku University of Applied Sciences, Oulu University of Applied Sciences, and Tampere University of Applied Sciences.

METODI

The learning modules will be placed on the edX platform. Courses contain e.g. online assignments, games, reading materials, chat forums, short video clips and web links. Students will solve work-related problems collaboratively and working as virtual teams via the Internet. They will also learn from their peers. The courses will be designed using the platform's digital tools, which also give the students an opportunity to follow their own progress. Course tutors have an active role by continuously providing guidance and feedback

RISULTATI

Twelve different online modules will be produced for following special fieds: clinical chemistry, cl. microbiology, cl. cytotechnology and cytology, cl. hematology, immunohematology, cl. physiology, cl. neurophysiology, immunological methods, cell and molecular biology, preanalytics, point-of-care testing, and histology. A study will be conducted describing and evaluating the project. Data will be collected on the students' learning outcomes, too.

CONCLUSIONI

In the future we can offer for exchange students variable study paths and theoretical studies in the programs of Biomedical Laboratory Science in six UASs in Finland. In addition, study paths are more flexible for Finnish students and they can speed up their studies.

ID: 15396

THE DEVELOPMENT AND EVOLUTION OF AN ONLINE MEDICAL LABORATORY SCIENCE PROGRAM

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INTRODUZIONE

In 2002 the University of Cincinnati MLS Program saw the need to evaluate its curriculum and standing. Through this review, the program decided to expand its offering and take advantage of a population of laboratorians who wished to continue their education. An online Associate to Bachelor's degree completion program was developed. The MLS Program utilized advances in educational technologies to provide a curricularly comprehensive and engaging experience for laboratory students. No campus visits are required. Students have the ability to complete clinical requirements at their places of employment.

METODI

Technological advances in presentation technology has allowed for the incorporation of audio narrations, animations and video conferencing. A systematic timeline for the development of new course materials was used. This included working with instructional designers and new technologies. Understanding that many of the students entering the program had been away from courses for a while, we developed materials to help them succeed. As a result, an Orientation Course was created. Here students are walked through all of the expected functions they will encounter. A scheduling change was made to incorporate an on-boarding semester for all new students.

RISULTATI

The first cohort of students saw a 96.9% pass rate on their certification exam and in 2016 the rate was 90.3% which is 10.5% higher than the national average. We noted that students who are working full-time may need to step-out during their academic career and a flexible curricular design allows for this. Discussion boards have added to the richness of courses. Our students have a wealth of experiences which they readily share. This plays out in the Capstone course where students contemplate a number of issues. In Capstone students also complete a research project which has them presenting back to their local laboratory. Often times we hear that their laboratory will be implementing changes based on their students' research. During 2016, 137 students presented to 1080 people in 38 States and 3 countries.

CONCLUSIONI

Laboratory education must stay current and students have fewer options of programs to choose from. The UC MLS Program has designed an innovative program that prepares graduates for professional success.

ID: 15398

HOW TO PREPARE STUDENTS FOR THE CHALLENGES OF THE 21ST CENTURY IN BIOMEDICAL LABORATORY SCIENCES

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INTRODUZIONE

Higher education in Europe faced several changes during the last decades, characterized by digitalization, flexibility, networking and decentralization. These can all be ascribed to globalization. The endless possibilities of the world wide web and wireless communication contributed to expanding networks and created possibilities for place- and time independent learning. In addition, different governments stimulated international student experiences. The Flemish government developed a strategic plan, 'Brains on the move', and the European government has a key action to encourage students mobility, aiming a 20 % mobility rate among graduates in 2020. Therefore, almost every institution for higher education has 'internationalization of the curricula' as one of their priorities. Through internationalization students discover new cultures, expand their language skills and broaden their idea on social responsibility. Taken together, institutions for higher education are no longer just a place to transfer knowledge. They need to be a triggering environment, where students become critical and conscious cosmopolitans and teachers become coaches capable to guide students to achieve 21st century competences.

METODI

These new trends clearly affect the rapidly evolving sector of Biomedical laboratory sciences as well. Therefore, the Bachelor programme Biomedical laboratory sciences of UCLL designed a new curriculum that will be implemented from September 2018 onwards.

RISULTATI

This new curriculum will invest in blended learning, an ePortfolio, an international research project and international student mobility (i.e. internships). The ePortfolio and the international research project have already been implemented in the current curriculum. Students reflect on their choice for a study specialization and submit their reflection in a Portfolio. During one week, students travel to international partners to work together with foreign students on a research project, in which they are faced with cultural and training differences and broaden their communication skills.

CONCLUSIONI

This new curriculum will allow us to create 'next generation' graduates prepared for the challenges of the 21st century.

ID: 15410

COMPARISON OF PRESEPSIN (PSEP) AND PROCALCITONIN (PCT) FOR RISK STRATIFICATION IN THE SETTING OF A CARDIO-VASCULAR INTENSIVE CARE UNIT

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INTRODUZIONE

Background
PSEP concentrations have been shown to increase as a result of systemic inflammation triggered by bacterial infections. Clinical severity of sepsis and mortality risk can be predicted already by a single determination of PSEP at first presentation to the emergency department.
Objective
The purpose of our study was to investigate whether PCT and PSEP can contribute to detection of sepsis and risk stratification of critical patients from cardiovascular conditions admitted at the intensive care unit (ICU).

METODI

Methods
71 patients admitted at the ICU were included in the study. The study examined 4 patient groups: 0: patients with transfemoral implantation of a prostethic aortic valve (TAVI) without evidence of infection or sepsis who served as control group (n=17),
1: patients with sepsis (n=20), 2: patients after sudden cardiac death and resuscitation (n=22),
3: patients with severe pneumonia requiring assisted ventilation (n=12).
PSEP and PCT were determined at the time of admission to the ICU by using PATHFAST Presepsin (LSI Medience corporation, Tokyo) and cobas PCT BRAHMS. CRP was measured using the cobas assay (Roche Diagnostics).

RISULTATI

Results
The patients with sepsis revealed higher PSEP and PCT values compared to the other patient groups. Discrimination between controls and sepsis revealed RO-AUC values of 0.924 and 0.967, respectively. 23 patients died and 28 patients developed acute kidney injury receiving dialysis. Non-survivors (n=23) and patients with AKI/Dialysis (n=28) showed significantly elevated values. The results are summarized in the table. As CRP is commonly used as inflammatory marker in the ICU we added the CRP values for comparison.
Table: Summary of results
AKI
N=28
Medians Non-AKI
N=43
Medians
RO-AUC Non-survivors
N=23
Medians Survivors
N=48
Medians
RO-AUC
PSEP, pg/ml 2293 634 0.855 2462 710 0.798
PCT, ng/ml 8.95 0.29 0.797 8.77 0.68 0.734
CRP, mg/dl 136 44 0.680 134 52 0.650
SOFA score 11.0 8.0 0.718 11.0 7.0 0.781

CONCLUSIONI

Conclusion
PSEP showed the best diagnostic performance and may be used for risk stratification in the ICU setting in general. PATHFAST PSEP can determined in whole blood within 17 min and is suitable as POC assay in the ICU.

POSTERS

ID: 15121 PIN: 1

IS IT POSSIBLE TO PREDICT THE PRESENCE GASTRIC CARCINOIDS IN AUTOIMMUNE ATROPHIC CHRONIC GASTRITIS PATIENTS?

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BACKGROUND-AIM

Autoimmune Chronic Atrophic Gastritis (ACAG) is epidemiologically and biologically linked to gastric carcinoids type I (GC-I) and gastric adenocarcinoma. ACAG is often associated to other autoimmune disorders. The aim of the study was to evaluate the incidence of GC-I development and to discover potential diagnostic markers related to GC-I in ACAG

METHODS

141 ACAG were evaluated by endoscopy for the presence of GC-I. Serum pepsinogen (PG) PG1, PG2 and Gastrin 17 (G17) levels were evaluated by ELISA. Data were used to discriminate between ACAG and GC-I. A panel of genetic polymorphisms of PG2 gene and miRNA, that are known to modulate PG2 expression (rs9471643 C/G; rs6458238 A/G; rs8111742 A/G; rs121224 C/G; rs1002765 A/G; TATA-BOX length), was analysed by real time PCR.

RESULTS

Out of the 141 ACAG (115 F; mean age 54,5y), 21 patients (15%, 17F) presented with GC-I, 98 (69,5%) with a secondary autoimmune disorder among them autoimmune tyroiditis was the most frequent (61,9%). A difference in serum PG1/PG2 and G17 levels was found between ACAG with or without GC-I (r=-0.3768 95% CI-0.5499 to -0.1726, p=0.0005). Although it is known that PG2 level is associated with Helicobacter Pylori (HP) infection, we didn't find any statistically difference nor in the number of HP-positive patients nor in the IgG anti-HP load (HP+ GC-I 17,6%, HP+ ACAG 30,2%; IgG in GC-I mean 19,42 SD: ±27,71, IgG in ACAG mean 33,43 SD: ±41,43). Among the 6 genetic polymorphisms, we found that rs8111742 A/G and rs121224 C/G were associated to a difference in serum PG2 level between ACAG and GC-I ($p<0.005$). No significant differences were found between patients with/withouth tyroiditis and GC-I (6.3 % / 8.5 %).

CONCLUSIONS

GC-I are often diagnosed incidentally during endoscopy. We found a higher association between GC-I and ACAG than data present in literature and of interest we found a statistically significant difference in PG1/PG2 and G17 levels between ACAG with/without GC-I. The identification of a different level of PG and G17 in ACAG with GC-I could be proposed as a potential indicative marker for a further endoscopic targeted evaluation of GC-I in ACAG patients.

ID: 14987 PIN: 10

BENEFIT ANALYSIS OF BEFORE AND AFTER THE MERGE OF BIOCHEMISTRY LABORATORY

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BACKGROUND-AIM

"Completing the urgent biochemistry tests ASAP" is a critical index for urgent biochemistry tests. By shortening the delivery time of sample can enhance the achievement of this target. Originally, our urgent biochemistry laboratory and sample reception & delivery station are located on the first floor and the third floor of the main building respectively. Samples of the urgent biochemistry need to be delivered to the sample reception & delivery station on the third floor, then pass again to the first floor to the laboratory, which resulted in a long turnaround time(TAT). To improve this situation, we transfer the instruments of urgent biochemistry from the first floor to the third floor, merging with the original biochemistry laboratory to form a new biochemistry laboratory. At last, we analyze the actual benefits by evaluating the achievement of urgent biochemistry reports.

METHODS

On 25-26 February 2017, Tri-Service General Hospital (TSGH) merged the urgent biochemistry laboratory, which originally located on the first floor, with the biochemistry laboratory on the third floor. In which the laboratory space, staffs, instruments and the analytical process were all integrated to be one new biochemistry laboratory adjacent to the sample reception & delivery station. It will shorten the delivery time of urgent samples from the emergency and the wards to the laboratory. This study continues with the analysis of statistical data before and after the merge of the laboratory, from March 2016 to February 2017 and from February 2017 to October 2017, in total 12 months and 8 months respectively. Targetting to the achievement of reports within 30 mins, 40 mins, 60 mins and 2 hours respectively with the urgent biochemistry samples from wards, emergency and out-patient clinics.

RESULTS

Comparing before and after of merging the laboratory, the difference of the mean values of achievement rate of reports of urgent biochemistry per month:1.Achievement rate of report within 30 mins: ward samples(+11.4%), ER samples (+6.0%), out-patient clinic samples (-2.5%) 2.Achievement rate of report within 40 mins: ward samples(+14.3%), ER samples (+4.5%), out-patient clinic samples (-2.5%) 3.Achievement rate of report within 60 mins: ward samples(+7.0%), ER samples (+5.0%), out-patient clinic samples (+0.5%) 4.Achievement rate of report within 2 hours: All meet 100%, no differences comparing before and after the merge.
Data above shows an irreversible improvement of achievement rate of completing the report after the merge.

CONCLUSIONS

TSGH merged the two laboratories into one by transferring the urgent biochemistry laboratory. The delivery of mass urgent samples between departments or across floors is improved. Reports of urgent samples from wards and emergency can now be achieved more efficiently even in a shorter time, which can achieve the maximum benefits of the replanning in urgent biochemistry procedure.

ID: 15115 PIN: 100

HEPATITIS B VIRUS INFECTION AMONG ASYMPTOMATIC SUBJECTS ATTENDING HEALTH SCREENING

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BACKGROUND-AIM

Hepatitis B virus (HBV) causes acute and chronic hepatitis in humans. Hepatitis B is one of the most common viral infections in the world and it is estimated that two billion people have been infected with the hepatitis B virus and approximately 350 million people are living with chronic (lifelong) infections, and in Nigeria, it is estimated that about 20 million people are infected and about five million die of the consequences. In this study, we have investigated the status of HBV infection among asymptomatic subjects attending Dr Hassan's Hospital and Diagnostic Centre for routine health screening.

METHODS

4120 subjects (2585 males, 62.74%) and (1535 females, 37.26%) aged between 2 – 80 years attending routine health screening between February 2014 and December 2016, were tested for serum antibody to Hepatitis B surface antigen (HBsAg), using Aria HBsAg Rapid test kit (CTK Biotech Inc. CA, USA) and standard ELISA methods. The study was approved by the Ethical Committee of Dr Hassan's Hospital.

RESULTS

318 (7.72%) subjects comprising 241 males (5.85%) and 77 females (1.87%) tested positive to HBsAg antibody. 122 (2.96%) subjects within the age bracket 21 – 30 years showed the highest number of positive results, followed by 106 (2.57%) subjects within age 31- 40yrs and 53 (1.29%) subjects aged
41-50 years.

CONCLUSIONS

The high rate of HBV infection among the most productive age group of 21 – 50 years has severe public health and economic consequences. The result of this study agrees with the earlier reported high burden of Hepatis B virus infection among Nigerians. The need to vigorously promote public enlightenment about HBV infection prevention, testing and vaccination measures is evident, since majority of infected persons do not have or show any symptoms.

ID: 15127 PIN: 101

THE PAPILLOMAVIRUS (HPV) MIGHT HAVE A KEY ROLE IN BENIGN AND MALIGNANT PROSTATE LESIONS

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BACKGROUND-AIM

is to show the role of the Papillomavirus (HPV) in benign and malignant prostate lesions, expecially in malignant. HPV is a DNA virus related to cervical carcinoma; a lot of reports, in literature, confirm that there is a relationship between HPV and other cancers: oral cancer, skin cancer, and some types of lung cancer. At the moment men are considered only a healty bearer and only in few cases HPV causes penile cancer.

METHODS

we examinated 30 patients with pre-cancerous and/or cancerous lesions. DNA extraction was carried out from paraffined tissue of prostatic glands.Subsequently an amplification of a 450 bp, HPV specific L1 gene, was performed with the MY09/11 consensus primers (HPV Screening L1- NanoGen Advanced Diagnostics). The PCR products were revealed on the agarose gel and genotyped with reverse hybridization on nitrocellulose strips. This test for HPV genotypes identification was based on amplification of a part of L1 viral region (450 bp) by polymerase-chain-reaction (PCR) using the primers MY09- MY10, while a shorter sequence (150 bp) was obtained by nested PCR, using the primers GP5 – GP6 and involves genotyping strip of 40 HPV types (ABAnalitica®-Advanced Biomedicine).

RESULTS

on 30 patients examinated, we detected the presence of HPV High Risk (HR-HPV) in 14 samples with positive biopsy for malignant cells (Gleason score 2-5), in 3 patients with prostatitis we detected HPV 6 (Low Risk), 4 patients, with a prostatic carcinoma (Gleason score 6-8), were HPV negative, and 9 patients were negative for HPV and histological diagnosis. Gleason system is based glandular architecture of the tumor. They were considered the architectural patterns: primary (predominant) and secondary to which was assigned a score from 1 to 5;the Gleason score is thesum of the two patterns.

CONCLUSIONS

the results show that HPV infection could play a key role in benign and malignant lesions of the prostate, and not only in cervix cancer; therefore the HPV screening and genotypizzation might be foundamental also in man. Further studies are needed to confirm the results obtained.

ID: 15139 PIN: 102

INACTIVATION OF VIRUS BY NEUTRAL ELECTROLYZED WATER

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BACKGROUND-AIM

To clean the environment and instrument contaminated with viruses is an important approach to prevent the transmission of virus infections. Hypochlorous acid is a well-known chemical oxidant which could effectively inactivate viruses, and sodium hypochlorite solution (bleach) was used widely in our daily life. However, due to the corrosiveness, pungent odor, its usage is limited. To overcome this disadvantage, neutral electrolyzed (NE) water containing hypochlorous acid without sodium was developed and tried to use for inactivating the viruses. The aim of this study is to evaluate the virus inactivation efficacy of neutral electrolyzed water against nine common viruses.

METHODS

The NE water (410 ppm of hypochlorous) was made by electrolysis of saturated sodium chloride water using Envirolyte electrodes. Nine common viruses: seasonal influenza A H1N1 (H090135), pandemic influenza A H1N1 virus (VI110809), Influenza A H3N2 (H090103), influenza B virus (B110439), herpes simplex virus type 1 (D110647), adenovirus (H3457), enterovirus type 71 (VI061482), Coxsackie virus B5 (D100302) and echovirus type 6 (D110604) were used as the target viruses. The inactivation assay was performed by mixing the virus with NE water (1:9), incubated at RT for 1 and 10 minutes. The residual virus infectivity was assayed by plaque assay or TCID50.

RESULTS

The results indicated that the NE water could efficiently inactive all tested viruses. NE water (410 ppm of hypochlorous) could inactive the all nine tested viruses after mixing each other for one and ten minutes (>99% infectivity inactivation). When reduced concentration of hypochlorous to 41 ppm, the NE water still can inactive the virus infectivity ranged from 90-99%. The inactivation infectivity percentages of the more diluted NE water (4.1ppm) were decreased variable with different viruses (0-85%).

CONCLUSIONS

NE water can be used for the environmental and instrument cleaning works because of its good inactivating ability, short reaction time and neutral. The mechanism of inactivation need further investigated.

ID: 15149 PIN: 103

SQUAMOUS EPITHELIAL PENILE LESION, ONCOGENIC HIGH-RISK PAPILLOMAVIRUS (HPV) RELATED, IN A CASE OF SUSPECTED ZOON'S BALANOPOSTHITIS

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BACKGROUND-AIM

to demonstrate the correlation between a squamous penile epithelial lesion and Papillomavirus (HPV) infection in a case of suspected Zoon's balanoposthitis.

METHODS

the cytological sample, taken by cytobrush in the area of balano-preputial wrinkle, was submitted to extraction by using an automatic extractor (Easymag Biomerieux) to obtain the genomic DNA and, possibly, viral DNA. The extracted DNA was amplified by qualitative end-point PCR, with next detection on agarose gel, using the Ampli-HPV screening kit (Dia-Chem). Subsequently, PCR products were subjected to genotyping, using the HPV Typing High Risk kit.

RESULTS

the histo-pathological diagnosis of the bioptical specimen, collected at the balano-preputial wrinkle, revealed the presence of a moderate and severe grade epithelial lesion. Research and typing of HPV DNA (HPV DNA Test) demonstrated the presence of high-risk HPV genotype 39, also tested under the immunohistochemical profile with protein p16 and Ki67.

CONCLUSIONS

HPV is known to be an oncogenic virus related to cervix cancer , oral cavity cancer and ano-genital cancer. Until now, cases reported in literature of pre-cancerous and / or cancerous lesions at the penile and/or scrotum area, are very few which due to the fact that man has only been regarded as a carrier of the virus. Currently, HPV vaccine has also been extended to males and this testifies to the importance of this infection even in male. Our study demonstrates the presence of a squamous epithelial penile lesion, oncogenic high-risk HPV-related, and this should induce more attention to search this virus even in cases of penile and scrotum lesions.

ID: 15155 PIN: 104

ALTERATION OF THE LEVELS OF INSULIN AND GLUCEMIA IN PATIENTS WITH HEPATITIS C

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BACKGROUND-AIM

The role of the hepatitis C virus in the development of type 2 diabetes mellitus is supported by recent publications. In addition, insulin resistance decreases in patients with sustained viral response to treatment with pegylated interferon alfa plus ribavirin.
The aim of this study is to determine the incidence of type 2 diabetes mellitus in patients with hepatitis C treated with pegylated interferon alfa plus ribavirin.

METHODS

Retrospective study that included patients with positive biopsy for chronic Hepatitis C with treatment with pegylated interferon alfa and ribavirin for 24-48 weeks depending on the genotype. We also studied the family history of type 2 diabetes, age, sex, weight, height, body mass index, risk factors for infection, hepatic steatosis and the degree of fibrosis.

RESULTS

The characteristics of the cohort were: 52 (9.9%) patients had type 2 diabetes at baseline and 26 (4.9%) had altered fasting glucose levels, 32.1% had a family history of diabetes. In addition, 35.6% were women. 64.2% had genotype I. Of these, 41.8% had steatosis and 23.1% had advanced fibrosis. The mean age was 45 ± 10 years, the glycemia was 93 ± 11 mg / dL and the BMI 26.1 ± 4.7 kg / m2. In the group of 447 patients with normal fasting blood glucose, 247 reached the sustained viral response (SVR) and in 21 of the 200 who did not have SVR.

CONCLUSIONS

The sustained viral response to treatment with pegylated interferon alpha and ribavirin in patients with chronic hepatitis C decreases the risk of developing impaired fasting glucose and / or diabetes.

ID: 15178 PIN: 105

THE PROGNOSTIC SIGNIFICANCE OF SERUM NEOPTERIN IN THE EARLY ASSESSMENT AND MONITORING OF THE PROGRESSION OF DENGUE VIRAL INFECTION AMONG FILIPINO PATIENTS FROM SELECTED TERTIARY HOSPITALS IN SAN FERNANDO, PAMPANGA, PHILIPPINES

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BACKGROUND-AIM

The researchers seek to incorporate serum Neopterin, a product released by cells such as monocytes and macrophages stimulated by interferon-© produced by activated Th1 cells, as a potential prognostic tool, that can aide physicians, who rely more heavily on subjective and unpredictable patient signs and symptoms rather than laboratory, in the clinical management and monitoring of Dengue without warning signs (DWOS), Dengue with warning signs (DWS), and Severe Dengue (SD).

METHODS

The Neopterin enzyme-link immunosorbent assay (ELISA) kit were used to measure serum Neopterin levels among the each of the experimental groups (DWS, DWOS, and SD) upon admission, after 24 hours, and after 48 hours, and the Neopterin values were then correlated with the corresponding vital signs, laboratory parameters, and signs and symptoms.

RESULTS

Results showed that upon admission, the mean neopterin of patients diagnosed with SD is significantly higher ($p<0.001$) than those with DWS, while those with DWOS had significantly lower ($p=0.030$) mean neopterin value as compared to those with DWS. Moreover, the neopterin of patients with SD significantly increased after 24 and 48 hours ($p<0.05$), which were consistently higher than those with DWS and DWOS ($p>0.05$). Further, the platelet counts of DWOS patients were significantly higher compared to SD and DWS ($p<0.05$) after 24 and 48 hours, while those with SD and DWS did not differ ($p>0.05$).

CONCLUSIONS

Upon admission of serologically confirmed Dengue infected patients, a significant increase in serum Neopterin levels were observed among DWOS, DWS, and SD patients, in which the values correlate to each of the groups' established laboratory parameters, vital signs, and signs and symptoms, after 24 hours and 48 hours upon admission.

ID: 15208 PIN: 106

SEROPREVALENCE AND GENOTYPE DISTRIBUTION FOR HEPATITIS C VIRUS IN HIV-INFECTED PATIENTS IN NORTHERN TAIWAN

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BACKGROUND-AIM

According to World Health Organization (WHO), there are 37 million people infected with HIV globally, and among which, 2.3 million are HIV/HCV co-infected patients. HIV/HCV co-infection was shown to have higher risks of liver-related mortality. Since the HCV genotypes will influence the selection of direct-acting antiviral agent (DAA) for HCV infection, the HCV genotypes in study subjects will also be determined. The aim of our study is to investigate the HCV seroprevalence, incidence, genotype distribution and risk factors for HCV infection in HIV patients in northern Taiwan.

METHODS

A total of 2,371 blood specimens from HIV-1-infected patients who received clinical care at National Taiwan University Hospital (NTUH) and were seronegative for HCV before 2016 were included for analysis. The anti-HCV IgG ELISA kit (Dia. Pro, Italy) was used to determine the HCV prevalence and incidence. The seropositive specimens were further confirmed by detection of HCV RNA viral loads (VL) (COBAS® AmpliPrep HCV Test, v2.0, Roche, USA) and their HCV genotypes by NS5B PCR and sequencing. For those HCV seropositive with undetectable HCV VL, a recombinant immunoblot assays (RIBA) kit (Mikrogen Diagnostik, Neureid, Germany) was used to confirm the HCV antibody responses.

RESULTS

The HCV seroprevalence and incidence in 2016 are 1.77% (42/2,371) and 18.77 per 1,000 person/year (PY) (36/1,917.5), respectively. 94.4% (34/36) of the coinfected patients are MSM. Baseline syphilis ($p < 0.001$), 4-fold increase of serum RPR titer ($p < 0.001$), mean AST level ($p < 0.05$), AST>37 U/L ($p < 0.001$), mean ALT level ($p < 0.001$) and ALT>41 U/L ($p < 0.001$) were found to be associated factors for HCV seroconverter in a nested case-control study. Only mean ALT value ($p < 0.05$) was associated with HCV seroconverter in the multivariate analysis. Of the 11 patients with undetectable HCV RNA, four were positive, one was borderline and six were negative by RIBA. Of the 34 HCV PCR positive specimens, the most prevalent HCV genotype was genotype 2a (17/34, 50%), followed by genotype 6a (9/34, 26%), genotype 1b (5/34, 15%), genotype 1a (2/34, 6%), and genotype 3a (1/34, 3%).

CONCLUSIONS

Continued surveillance of linked molecular, virological, demographic and epidemiological information on recently acquired infections will contribute to understanding the on-going HCV epidemic in HIV-Infected Patients. To sum up, regular screening of HCV antibody or even HCV RNA detection is suggested for the high risk group.

ID: 15223 PIN: 107

INCREASING PREVALENCE SIGNIFICANTLY OF HEPATITIS C VIRUS SUBTYPE 6A IN HIV-1 PATIENTS BETWEEN 2013-2014 AND 2015-2016 IN NORTHERN TAIWAN

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BACKGROUND-AIM

The genotypes of hepatitis C virus (HCV) infection in humans and the disease course of chronic hepatitis C are both remarkably variable. Tracking the change of HCV genotypes in various epidemiological settings is critical for both disease surveillance and the development of improved antiviral treatment. In this study, we tracked the changes in the prevalence of the HCV genotypes in Northern Taiwan between 2013-2014 and 2015-2016.

METHODS

A total of 61 HCV-RNA-positive plasma samples were collected from HIV-1 infected patients during the period 2015-2016. The genotypes were determined by phylogenic analysis using the NS5B sequences. HCV genotypes obtained in 2015-2016 were compared with our previous study, which recorded data in the period 2013-2014. Pearson chi-square test and t-test were used to statistically analyze the results.

RESULTS

In 2015-2016, HCV subtypes 2a, 6a, and 1b were detected in 57.4% (35/61), 23.0% (14/61) and 11.5% (7/61), respectively. On the contrary, in 2013-2014, HCV subtypes 2a, 6a, and 1b were detected in 54.0% (27/50), 2.0% (1/50) and 40.0% (20/50), respectively. When compared with the period of 2013-2014, although no significant difference was found in gender, age or risk behaviors for genotypes 1, 2, 3 and 6, the subtype 6a frequency was significantly increased from 2.0% to 23.0% ($p < 0.01$), otherwise we also found the subtype 1b frequency was significantly decreased from 40.0% to 11.5% ($p < 0.01$) in the HIV-1 infected patients during 2013-2016.

CONCLUSIONS

Genotype 2a, historically the most prevalent in HIV-1 infected patients, is still predominant. However, when comparing the two time periods, HCV subtype 6a seems to show an increase in HIV-1 infected patients not related to age or gender, indicating that HCV subtype 6a has rapidly increasing over the past four years in Northern Taiwan. Therefore, implementation of HCV advanced molecular surveillance (AMS) is essential for disease control and therapy.

ID: 15253 PIN: 108

IMPLEMENTATION OF ZIKA VIRUS ANTIBODY TEST IN THE DEPARTMENT OF MICROBIOLOGY , OSLO UNIVERSITY HOSPITAL, OSLO, NORWAY

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BACKGROUND-AIM

Recently, outbreaks of Zika virus infections have occurred in the Americas and the Caribbean. It is expected that the virus will continue to cause sporadic infections in these areas, and also in Africa, South East Asia and Oceania.
The Norwegian Health Authorities have updated recommendations concerning testing for Zika virus antibody in exposed pregnant women and their partners, and other travellers with symptoms. An increasing amount of samples for testing is therefore expected.
The reference laboratory for vector borne diseases, The Norwegian Institute of Public Health (NIPH), has asked the Department of Microbiology, Oslo University Hospital, to perform the primary testing for Zika virus antibodies.

METHODS

Sera from 48 patients, analyzed manually with Anti-Zika Virus ELISA IgM and IgG (Euroimmun, Germany), were received from NIPH. Our laboratory verified the same assays on our EVOLIS Automated Analyses Platform.
All results were compared with the results obtained at NIPH.

RESULTS

Good compliance with the results of NIPH.

CONCLUSIONS

Euroimmun Anti-Zika Virus IgM and IgG tests are implemented as primary tests for investigation of suspected Zika virus infection at the Department of Microbiology. Reactive samples are sent to NIPH for further investigations.

ID: 15299 PIN: 109

THE PREVALENCE OF ELEVATED SERUM CREATININE IN HIV INFECTED PATIENTS IN A TEACHING HOSPITAL IN SOUTHERN NIGERIAN. A TWO -YEAR REVIEW

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BACKGROUND-AIM

BACKGROUND
Renal disease is a relatively common complication in patients with Human Immunodeficiency Virus (HIV) disease. HIV Nephropathy can result from direct kidney infection with HIV or from the adverse effects of antiretroviral drugs. Previous studies reported that approximately 10% of the patients with HIV infection develop HIV – Associated Nephropathy (HIVAN). However over the last decades, morbidity and mortality as a result of HIV-1 infection has remarkably decreased with the availability of potent new antiretroviral drugs.The aim of the study was to determine the prevalence of elevated creatinine levels in patients living with HIV (PLWHIV) in University if Uyo Teaching Hospital (UUTH) in South- South Nigeria for a period of two years.The methodology employed was collection of samples with vacutainer needles and bottles from the clinic side laboratory and separating the samples immediately after collection into vials bottles for invitro analysis using Selectra Junior chemistry analyser in the retroviral laboratory of the UUTH. A total of 1,500 patients were reviewed, out of which 271 (18.1%) patients had elevated serum creatine. Age and Sex were stronglyassociated with abnormal creatinine level among PLWHIV. The significant was P < 0.0001. HIVAN remains an important complication of HIV infection in blacks even in recent years.
Key Words: Review, Prevalence, HIV HAART-Naïve, Creatinine

METHODS

Methods: Jaffe – Kinetic
This was a two (2) year review of records of all newly diagnosed HIV positive individuals attending UUTH before the commencement of antiretroviral regimen.

RESULTS

Results
A total of 1,500 HIV clients were assessed for creatinine level a cut of was used to determine abnormal level of creatinine.as the proportion of patients with abnormal level was 18%, this was found to be significantly associated with increase in age of the clients (P <0.0001) and with male gender (P<0.0001)
Age and sex are strongly associated with abnormal creatinine level among the PLWHIV. Older patients are more likely to have abnormal creatinine level than the younger ones. Also male are more likely than female..

CONCLUSIONS

Conclusion; This review underscores the importance of early detection for HIV to initiate prompt treatment\ especially among the male.

ID: 14992 PIN: 11

USE THE SAMPLE BARCODE TRACKING SYSTEM TO MONITOR THE INPATIENT URGENT SPECIMENS TRANSPORTATION TIME

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BACKGROUND-AIM

TSGH Information Technology department develops the web based inpatient “Sample Barcode Tracking System”, which is mainly to record the pre-analytical phase – when a specimen is collected, transported and processed. And all the medical staffs can check the specimens status online.

METHODS

We analyzed the relevant data from 2014 to 2015 with Microsoft excel from the database, to calculate the time of “The specimen is collected to sent out from the ward” and the time of “The specimen transported to the laboratory by shipping staff”. To calculate the different urgent test groups, like: Biochemistry, TDM, CBC, Coagulation and Urine test transportation time by shipping staffs in these two years.

RESULTS

Average “The specimen is collected to sent out from the ward” was 01:09:00 (hour: minute: second) vs 00:48:46 separately in 2014 and 2015. Average Biochemistry test was 00:45:18 vs 00:37:12, TDM test was 01:21:40 vs 00:48:50, Coagulation test was 00:49:06 vs 00:39:30, CBC test was 00:52:32 vs 00:41:32, urine test was 01:02:27 vs 00:49:31. Average “The specimen transported to the laboratory by shipping staff “ was 00:18:30 vs 00:13:32 separately in 2014 and 2015. Average Biochemistry test was 00:15:15 vs 00:13:03, TDM test was 00:18:27 vs 00:13:01, Coagulation test was 00:17:38 vs 00:14:39, CBC test was 00:18:17 vs 00:15:24, Urine test was 00:16:22 vs 00:11:23.

CONCLUSIONS

Overall, in 2014, from the specimen is collected to the laboratory received the specimen, the time was spent nearly 1.5 hours. In 2015, the time was around 1 hour. We found the workflow can be reengineered, because the specimens need to be sent out still spent almost 50 minutes. If the number of shipping staffs can be increased, increase the number of specimens shipped, or purchase the falicilities like : Air-shooter to transport the specimens from the ward to laboratory directly, these are able to effectively shorten the specimen waiting time to be sent out. The laboratory gets the specimens earlier, to provides the test results to the physician earlier for improving the patient safety.

ID: 15304 PIN: 110

CLINICAL MANIFESTATIONS AND LABORATORY FINDINGS IN HUMAN SEASONAL INFLUENZA VIRUS INFECTION 2016/2017

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BACKGROUND-AIM

Influenza or flu is an acute respiratory disease caused by influenza viruses that occurs every year during winter months in smaller or larger epidemics. Laboratory diagnosis is important to distinguish influenza from other respiratory virus infections.

METHODS

We conducted a retrospective study of the medical records of patients older than 18 years (range, 18-98 years) diagnosed with influenza and hospitalized at the University Hospital for Infectious Diseases Zagreb in the period from December 1, 2016 to March 31, 2017. Age, sex, influenza virus type, time to diagnosis in the hospital, severity of illness, complications, and laboratory results were analyzed. Statistical analyses were performed using SPSS 20 (SPSS Inc., Chicago, IL, USA).

RESULTS

We examined 233 patients (93 male and 140 female), and hospitalized 140 (60.1%). Nasopharyngeal swabs were collected, and four types of influenza was detected by the RT-PCR method: Influenza A/H3N2 virus in 197 patients (84.6%), A/H1N1/pdm09 in 25 (10.7%), B Yamagata 6 (2.6%), B Victoria 5 (2.1%). The patients received a diagnosis of influenza between hospital days 1 and 21 (mean 4). The most common symptoms and signs were high temperature, fever, cough, respiratory symptoms, headache, and fatigue. Mean white blood cell counts were in patients with influenza A/H3N2 infections 7.303 ± 3.317 x 10^9 /L , vs 8.104 ± 3.304 x 10^9 /L in A/H1N1/pdm09. Mean lymphocytes were 17.1± 10.6 % in A/H3N2 infections, and 17.2 ±10.2 % in A/H1N1/pdm09. The mean platelet count was in influenza A/H3N2 infections 193 ± 67.2 x10^9/L, in A/H1N1/pdm09 infections 205 ± 64.33 x10^9/L. C-reactive protein was elevated in most patients, but was significantly higher in influenza A/H3N2 infections than in influenza A/H1N1/pdm09 infections (62.24 ± 68.14 mg/L vs 43.54 ± 49.47 mg/L). In the age group of 65ε years mean CRP was 76.23, while in the group <65 years was 36.41 mg/L (p<0,01). The most frequent complications are respiratory complications, especially pneumonias (66 cases). In the age group of 65ε years pneumonia developed in 43.93% of patients, while in the group <65 years pneumonia developed in 12.70% of the patients (p<0,01).

CONCLUSIONS

Influenza A(H3N2) was dominant in the season 2016-2017. The most frequent complications among people over 65 years are pneumonias.

ID: 15382 PIN: 111

APPLICATION OF HEALTHCARE FAILURE MODE AND EFFECTS ANALYSIS TO IMPROVE DENGUE PATIENT ADMISSION

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BACKGROUND-AIM

In Taiwan a dengue virus serotype 1(DEN-1) outbreak occurred in 1987-1988. Taiwan experienced a large dengue outbreak in 2014, with 15,492 indigenous cases. In 2015, a dengue epidemic was caused mostly by DEN-2 and there were 43,784 cases in Taiwan(including 22,760 in Tainan and 19,723 in Kaohsiung) that resulted in 218 death. The purpose of this project is to avoid the congestion caused by dengue epidemics.

METHODS

Application the Healthcare Failure Mode and Effects Analysis (HFMEA) to lists the possible failure modes and causes of each process and step. Risk Priority numbers (RPN) are calculated by severity and incidence. Using the RPN ≧ 8 points and the Decision tree to check the hospitalization process of dengue patients, find out 31 failure reasons. Using bench mark learning and brainstorming techniques, we organized a multi-disciplinary quality improvement task force. Improvement strategies including Referring Stations for Quarantine in Kaohsiung Airport and formulate he hospitalization process of dengue patients.

RESULTS

The results of the project include: The total RPN value of HFMEA decreased from 855 to 422, a decrease of 50.6%. The average waiting time for emergency treatment decreased from 18 hours to 7 hours. The incubation period for dengue fever decreased from 2.7 days in 2015 to 1.5 days in 2016. Hospitalization days decreased from 6.02 days in 2015 to 3.5 days in 2016.

CONCLUSIONS

During the implementation of the project, we also found that people have a low awareness of dengue fever prevention and control. Various serotypes of dengue virus are transmitted to humans through the bites of infected Aedes albopictus (mainly Ae). In the prevention of infection, mosquito control is very important to understand clearly the habits of endemic mosquitoes can make prevention and treatment of dengue more efficient. The main strategies to control dengue fever in Taiwan are eliminating vector breeding sources and effectively lowering vector (mosquito) density. In order to effectively eliminate the source of media breeding, it is very important to educate schools and communities on the prevention and control of dengue fever.

ID: 15383 PIN: 112

VIRIOPLANKTONS: PHAGE THERAPY IN INDUCED BACTEREMIC MICE

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BACKGROUND-AIM

Multidrug resistant pathogens are commonly encountered in the modern world. Thus, there is a need for novel treatment strategies. However, despite the emergence of new antibiotic therapies, there has been a continued failure in the battle against drug resistance (Goossens et al., 2005). Hence, the potential of virioplanktons as a treatment option for resistant drug infections such as MRSA and MDR Pseudomonas aeruginosa was assessed in the study.

METHODS

The study utilized 80 BALB/c Mice (Mus musculus albinus) model aged six (6) – eight (8) weeks. It was divided into three experimental groups in in-vivo testing experiments namely: Minimum lethal Dose, test for phage toxicity and test for Phage Therapy. In phage therapy, 3 groups: 1 group treated with parenteral Imipenem as a positive control and 1 untreated group as negative control and 1 group as the experimental group. A total of 20 seawater samples was collected by scuba diving at the coral reefs of Calatagan, Batangas City and or Sabang Island of Puerto Galera Philippines in a surface with a minimum 0.5 M depth with a screw cap Gatorade bottle. The bacteriophages from virioplanktons was isolated using the double overlay technique. The phage titer and morphology based on TEM was done to verify for the presence of lytic phages. The phage lysate was then used to treat mice infected with MDR Pseudomonas aeruginosa and (MRSA) Staphylococcus aureus.

RESULTS

Results revealed that there is no significant difference in the effectiveness in treating MDR Pseudomonas aeroginosa between the virioplanktons and meropenem. However, there is a significant difference in the health state scale for bacteremic mice treated with virioplanktons and antibiotics meropenem in (MRSA) Staphylococcus aureus.

CONCLUSIONS

Therefore, virioplanktons can be a safe treatment option in addressing infections caused by MDR Pseudomonas aeroginosa and MRSA) Staphylococcus aureus.

ID: 15457 PIN: 113

SEROLOGICAL AND VIRAL LOAD INVESTIGATION OF THE GROUP OF CHRONIC HEPATITIS B CARRIERS

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BACKGROUND-AIM

The purpose of this study was to determine the proportion of chronic hepatitis B carriers according to the viral load (HBV DNA) and the presence of the HBeAg in the serum of the patients.

METHODS

We conducted a study of 42 chronic hepatitis B carriers characterized by the presence of HBsAg, antiHBc and antiHBe or HBeAg respectively. Average age of males was 43.4 ± 23 years and the females was 48.2 ± 19.3 years (age difference was not statistically significant, p = 0.495). Serological investigation was performed by chemiluminiscent microparticle immunoassay (CMIA) using Architect i2000sr (Abbott) and HBV DNA was detected by Abbott RealTime HBV assay (fully automated m2000 system).

RESULTS

Among analyzed group of chronic HBV carriers (HBsAg+, antiHBc+ and antiHBe+ or HBeAg+ respectively), 30/42 were antiHBe+ with mean viral load of 4.3 ± 2.3 log, 6/42 were HBeAg+ (mean viral load was 3.6 ± 2.03 log). However, the difference was not statistically significant (p=0,519). Six of 42 patients were antiHBe+ with undetectable HBV DNA.

CONCLUSIONS

Although the difference between chronic hepatitis B carriers with or without HBeAg present in the serum was not statistically significant, the results showed higher viral load of antiHBe+ patients (late conversion) compared to HBeAg+ carierrs (without seroconversion). A proportion of HBeAg-negative carriers with higher HBV replication suggests higher potential of the progression of the liver disease then HBeAg negative carriers with undetectable HBV DNA.

ID: 15247 PIN: 114

CHRONIC HEPATITIS B INFECTION MAY CAUSE FALSE POSITIVE RESULTS IN ANTI-DSDNA ASSAY EMPLOYING PLASMID DSDNA AS ANTIGEN SOURCE.

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BACKGROUND-AIM

The 2017 ACR-EULAR new criteria for classification of Systemic Lupus Erythematosus (SLE) requires patients samples have with anti-nuclear antibodies (ANA) titer above 1:80 on when tested using HEp-2 indirect immunofluorescence assay. Autoantibody against the double stranded DNA (dsDNA) also play an important role in diagnosis of SLE. This study aims to evaluate samples that have been tested ANA negative; but positive for anti-dsDNA using plasmid dsDNA as antigen source.

METHODS

4,623 patient samples have been collected in Taipei Veterans General Hospital, Taiwan were tested for antidsDNA and anti-nuclear antibodies. Quantification of anti-dsDNA antibodies measured was performed using a fluorescence enzyme immunoassay (plasmid dsDNA antigen, cut off value 15 IU/mL, Thermo Fisher Scientific) and ELISA (salmon sperm, cut off value 100 IU/mL, EUROIMMUN). Anti-nuclear antibodies were measured using an indirect immunofluorescence assay on HEp-2 cell (DiaSorin).

RESULTS

Of the 4,623 patients, 34 were positive for anti-dsDNA but with ANA titer below 1:80. Hepatitis B Virus was detected in 24 patients, with 15 determined to be chronic HBV infection (62.5%, 15/24). High correlation of dsDNA values (plasmid dsDNA antigen) with HBV DNA level were observed. For these anti-dsDNA positive patients, 7 patients were diagnosis with SLE (7/33, 21.2%); 2 patients were diagnosed with both SLE and HBV infection (2/33, 6.06%). 8 of chronic HBV infection patients were tested negative (<100 IU/ml) for anti-dsDNA by ELISA method with only 3 patients' anti-dsDNA value above 15 IU/mL.

CONCLUSIONS

From the few chronic HBV infection patients that were diagnosed with SLE in our study, it seems that SLE related anti-dsDNA antibodies are not induced by hepatitis B virus infection. One possible reason we believe to be that the autoantibodies are cross-reactive with anti-virus dsDNA. Hepatitis B virus contains partially double stranded circular DNA genome. Circular plasmid dsDNA antigen is seen more like HBV genome structure than other dsDNA source. With the high prevalence of chronic hepatitis B in Asia, hepatitis B testing should be considered in those positive anti-dsDNA assay using plasmid dsDNA as antigen source.

ID: 14928 PIN: 115

USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY BY TEACHERS AND STUDENTS IN BIOMEDICAL LABORATORY SCIENCE EDUCATIONS IN THE NORDIC COUNTRIES

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BACKGROUND-AIM

Seventeen degree programmes of Biomedical Laboratory Science (BLS) in all Nordic countries (Denmark, Estonia, Finland, Iceland, Norway and Sweden) collaborate in BioNord under NordPlus. For some years, BioNord focused on the use of information and communication technology (ICT) in the biomedical laboratory science education. The collaboration has made several projects where teachers were able to exchange teaching material for theoretical and practical training.
Purpose of study
The purpose of the study was to explore the use of information and communication technology (ICT) among teachers and students within the biomedical laboratory science studies in the countries collaborating in the BioNord.

METHODS

An electronic questionnaire was sent to BioNord partners in spring 2016. The questionnaire consisted of questions about knowledge and use of communications-, collaboration- and learning tools as well as expectations for guidance and support when using ICT in the education.

RESULTS

The questionnaire respondent rate for students was 27.5% and for teachers 51.2%. The major finding of the study indicates that students and teachers are not to the same extent on the same communication platforms and that platforms for collaboration could be optimized.
For communication teachers mostly used Skype and Facebook compared to students who mostly used Facebook and Instagram
For collaboration teachers mostly used Google Docs and Adobe Connect compared to students who mostly used Google Docs and OneDrive. As learning tools teachers mostly used YouTube Links, E-books and Demovideos/tutorials compared to students who mostly used YouTube links and E-books.
Students expressed that they needed guidance on the use of programs as well as peer-support. In the future teachers would like to use more diverse types of tools to support learning.

CONCLUSIONS

The study concludes that students and teachers need support to learn how to use ICT tools in education to support learning and learning outcomes.

ID: 14953 PIN: 116

WEB-BASED INSTRUCTION IN HEALTH CARE EDUCATION

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BACKGROUND-AIM

Web-based instruction has undergone rapid development. Many web-based experiments have been made in the field of health care. Web-based instruction is defined as the combination of different learning environments and face-to-face learning. The increased use of digital technologies is changing lecturers' work. The role of the lecturer is transforming from a disseminator of knowledge to a facilitator. There is increasing evidence that web-based instruction is at least equal to traditional face-to-face teaching and learning in achieving learning outcomes. The Degree Programmes in Biomedical Laboratory Science, Radiography and Radiotherapy, and Oral Hygiene at Metropolia University of Applied Sciences started in January 2015 a new web-based learning programme in Northern and Eastern Finland. The learning environment consists of digital and online technologies. Face-to-face instruction is used in practical studies. The purpose of this study was to describe lecturers' experiences in web-based instruction.

METHODS

The research method was qualitative, and the data was collected from health care lecturers (n=13) and tutors (n=3) by an electronic questionnaire. The data was analysed using inductive content analysis.

RESULTS

The results of this study revealed that web-based instruction was a challenge for lecturers. The challenge was associated with pedagogic and technical support and the tension between expectations and results. The lecturers were uncertain about students' learning and they described a loss of control over their work.

CONCLUSIONS

Web-based instruction is more complex than the traditional classroom setting. The web-based learning environment constructed by the combination of digital technologies and face-to-face learning is challenging. They should be integrated in a way that combines the strengths of both ways of learning in an optimal way. Lecturers need pedagogical and technical support for planning the instruction. The results of this study can be used in the development of a regional web-based learning model.

ID: 15105 PIN: 117

INVOLVING BIOMEDICAL LABORATORY SCIENTIST STUDENTS IN RESEARCH CONCERNING EPIGENETICS AND ENDOMETRIOSIS

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BACKGROUND-AIM

Background: Epigenetics are emerging as a potential biomarker for disease diagnostics and monitoring. Gene activity is regulated by epigenetics. As molecular biology techniques become more introduced in the clinical laboratories, it is important to introduce new genetic techniques to biomedical laboratory students. As a part of a research project, the students are involved in analyzing methylation patterns of the estrogen receptor beta (ER®) using methylation sensitive high resolution melting (MS-HRM). MS-HRM is a PCR-based technique where methylated and unmethylated DNA is differentiated according to melting temperature after bisulfite treatment of the DNA. Endometriosis is a common disease affecting 5-10% of women in the reproductive age and it is estimated that up 80% of unexplained infertility cases may be explained by endometriosis.
Aim: Introducing biomedical laboratory scientist students to bisulfite treatment and MS-HRM analysis through research concerning the methylation pattern of the ER® gene in the endometrium of women with endometriosis.

METHODS

Methods: Endometrial tissue from 19 fertile control women without endometriosis, 36 (±5.9) years, and from 19 women with diagnosed endometriosis, 31 (±4.7) year was subjected to DNA purification, DNA bisulfite conversion and MS-HRM analysis

RESULTS

Results: The students obtained successful bisulfite conversion of DNA and performed MS-HRM analysis where methylated and unmethylated ER® could be distinguished. The ER® promoter region was found to be hypomethylated in the endometrium of women with endometriosis compared with the endometrium of control women (P=0.036).

CONCLUSIONS

Conclusion: The students have gained experience with bisulfite conversion of DNA and PCR-based MS-HRM analysis. Hypomethylation of the promoter region of the ER® gene in the endometrium of women with endometriosis has not been reported so far. Based on the knowledge that methylation of promoter regions can regulate gene activity, we propose that hypomethylation of the ER® gene may result in altered expression of ER®. This could lead to deficiencies in the endometrium and thus, to subfertility or infertility.

ID: 15185 PIN: 118

TRAINING THE SKILLS OF DRAWING BLOOD AND THE COMMUNICATION WITH PATIENTS BY TWO LESSON PLANS.

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BACKGROUND-AIM

The outpatient testing is the first line and the only place that MTs need to face the patients. Other than other divisions of the department of laboratory medicine, the division of the outpatient testing is tough for newcomers, PGYs and interns. To avoid complaints from patients, making full preparation is essential for newcomers, PGYs and interns. The following two lessons help the trainees (newcomers, PGYs and interns) practice the skills of drawing blood and also practice the communication skills with patients.

METHODS

From the year 103 to 106, two lesson plans were applied on training thirty newcomers, PGYs and interns in the division of outpatient testing. There are 2 newcomers, 5 PGYs and 23 interns.
Lesson Plan One:
In the lesson plan of training the communication skills, thirteen complain cases were used for discussing how to serve patients. The frequent asked questions and answers were revealed to trainees so that they can learn the appropriate wording, intonation and eye contact when communicating with patients. Trainees learn listen to people and learn to be enthusiastic. Trainers observed trainees' knowledge, attitude and skills and then give feedback.
Lesson Plan Two:
Trainees used fake arms to practice how to draw blood repeatedly. Trainers gave advices of how to use the tools that trainees' seldom use. The tools include blood bottles, winged infusion sets, gas tubes and syringes. Trainers observed trainees' knowledge, attitude and skill and then give feedback. Finally, Mini-CEX was used for evaluation.

RESULTS

From the year 103 to 106, the above two lesson plans were applied on training thirty newcomers, PGYs and interns in the division of outpatient testing. The Satisfaction Survey shows 87 points result based on the 10-point scale. Trainees become confident when communicating with patients. Their blood drawing skills have been improved, too.Trainees listen to the patients in order to know their needs and observe both positive and negative body languages.Trainees promote their confidence in an efficient and economical way.

CONCLUSIONS

Using the two lesson plans helps trainees explore the pleasure of working in the division of outpatient testing. Besides, the medical service quality is promoted at the same time.

ID: 15279 PIN: 119

DIAGNOSTIC PARTNERSHIP IN EDUCATION BETWEEN OULU UNIVERSITY OF APPLIED SCIENCES (OAMK) AND HEALTH LABORATORY VALIFINN

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BACKGROUND-AIM

Oulu University of Applied Sciences (Oamk) and ValiFinn are diagnostic partners. The students from Oamk fulfill some of their practical trainings for private laboratory ValiFinn. They take care of blood sampling and measurements from the samples on Tuesdays and Wednesdays. As a private healthcare service provider ValiFinn offer various analysis with or without a covering letter from a doctor. The clinical laboratory situates in the premises of Oulu University of Applied Sciences. In addition, ValiFinn has offered different thesis project for students.

METHODS

We evaluated our diagnostic partnership processes by describing our projects between 2015 and 2017. We studied the use of laboratory technologies in education among the students during the first and second year practical trainings in ValiFinn and counted ECTS credits they achieved in our projects.

RESULTS

We had four shared projects between 2015 and 2017 and eight students were involved in them. Students made Standard operation procedures (SOPs) and observed the quality and reproducibility for ValiFinn as part of their thesis. Between 2015 and 2017, Oamk has taken every year thirty-six students for the program in Biomedical Laboratory Science and all these students fulfilled with a workload/scope of three ECTS credits (at minimum) by working in ValiFinn's clinical laboratory. Students analyzed a wide range of measurements from clinical chemistry and hematology e.g. liver and kidney markers, cholesterols and blood count during their practical trainings in ValiFinn. Eight students (15 ECTS credits/ student) collected 120 ECTS credits by doing their thesis with shared projects.

CONCLUSIONS

Our diagnostic partnership is based on close relationships between teachers, students and ValiFinn`s specialists. We are aiming to develop our diagnostic processes and research abilities. We want to use laboratory and simulation technologies in education, which contribute our study paths, clinical know-how, research and diagnostic partnership with working life.

ID: 15020 PIN: 12

HEAT-INDUCED EPITOPE RETRIEVAL AND STAINING VARIABILITY; MICROWAVE DOMESTIC OVEN VERSUS FULL AUTOMATED SLIDE STAINING PLATFORM

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BACKGROUND-AIM

Tissue fixation in formol is a fundamental step in any sample preparation for histological analyses, namely to maintain tissue structure and antigen (Ag) viability. Heat-induced epitope retrieval in immunohistochemistry (IHQ) assay is crucial to unmask Ag due to formol crosslink reactions. Since 1991, microwave domestic oven (MDO) is one of the most used methods to unmask Ag since it is economically affordable and suitable to low volume histological slides. However, it has been reported MDO immunostaining variation, background staining, and disrupted morphology in tissues, due to MDO physical nature, internal reflections and enclosed load inside the microwave oven.
The aim of this work is study and compare the variability effects induced by Ag retrieval (AR) by MDO and automatic slide staining platform (ASSP).

METHODS

Ten tissues samples from breast cancer, non-small cell lung cancer and appendix were selected for representatively expressing all HER2 scores (0, 1+, 2+ and 3+), low PD-L1 expression (1 – 50%), and vimentin respectively. Thin 4 µm paraffin sections were made and IHQ protocols with the same reagents performed full ASSP, semi-manually with AR in MDO and then run on automatic platform, and full manually with AR in MDO.
Slide staining variability and tissue morphology integrity were evaluated in a blind way by three independently observers experienced in this methodology.

RESULTS

All the slides (10/10) performed in ASSP show intense and specific staining. Stained slides with semi-manual protocol show intense and specific staining (10/10) and partial disrupted tissue (2/10), without interpretation impact. All the slides stained by the manual protocol show high unspecific staining (10/10) with disrupted morphology, with interpretation impact (10/10).

CONCLUSIONS

According to the obtained results, we conclude that MDO allow by itself less reproducible results with an increased morphologic damage than automatic platform. The MDO protocols need to be optimized, namely in reagent concentrations and incubation time, to produce similar ASSP results.

ID: 15355 PIN: 120

USING E-LEARNING MODULES TO FOSTER LABORATORY REASONING IN CLINICAL HEMATOLOGY FOR MEDICAL TECHNOLOGY STUDENTS

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BACKGROUND-AIM

Nowadays, laboratory medicine plays the crucial role in health care, and we medical technologists have become the patient's best source of information about laboratory results. It is important to develop a comprehensive training program about laboratory reasoning for trainees to evaluate information from multiple perspectives and solve problems in different situations. Because e-learning modules have been used to bring diverse concepts together in an authentic clinical context, in this study, we performed a randomized crossover study to compare the learning impact on medical technology students of online e-learning modules in clinical hematology, compared with existing online PowerPoint resources.

METHODS

Fifty medical technology students within the 6-month period internship program were recruited and randomly allocated to two groups with equivalent prior academic performance, in which they were given access to either e-learning modules or PowerPoint resources for a 1-week block on WBC disorders. In block 2, both groups crossed over for a 1-week block on platelet and coagulation disorders and took turns to access either e-learning modules or PowerPoint resources. Outcomes were assessed using multiple choice questions as pre-tests and post-tests, with questions unrelated to hematology as internal controls. Questionnaires were administered to evaluate participants' acceptance toward e-learning modules.

RESULTS

Between groups, all participants achieved significantly higher average scores in the post-test when accessing e-learning modules than the existing PowerPoint resources (Block 1: $p < 0.001$, Cohen's $d = 1.0$; Block 2: $p = 0.008$, Cohen's $d = 0.9$). As to the responses to questionnaire items on participants' acceptance, all participants were overwhelmingly positive toward e-learning modules.

CONCLUSIONS

Our results support e-learning modules could efficiently foster laboratory reasoning in clinical hematology for medical technology students and produce better learning outcomes in a clinical training program. We believe the interactivity, dialogic feedback and integration with the authentic clinical context by e-learning modules contributed to its significant impact. The e-learning design in laboratory medicine may be a feasible learning strategy for novices to develop laboratory reasoning.

ID: 15407 PIN: 121

E-LEARNING TO IMPROVE PRACTICAL TRAINING IN THE MEDICAL LABORATORY

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BACKGROUND-AIM

Students in biomedical laboratory science (BLS) found it challenging to understand advanced laboratory analysis and instruments used in the relatively short time frame of their hands-on laboratory training. To improve students' preparation before practical laboratory training we considered e-learning as a possible strategy for better comprehension of principles and use of advanced instrumental analysis.

METHODS

Tutorial videos provides explanations and demonstrations on how to perform laboratory analyses. Videos are published on an open access web page (ePraksis.no), also including written information about all practical laboratory training during our study programme, both in-house laboratory courses as well as, all practical training in hospital laboratories. Students use this web page (ePraksis.no) preparing for practical laboratory training. Teachers use e-learning in their supervision and teaching as a tool for blended learning and flipped class-room. Additionally, our intension with ePraksis.no as an open access web page is to improve information to hospital supervisors on both content and learning outcomes of practical laboratory training in our study programme.

RESULTS

So far, 126 videos on ePraksis.no has been played more than 16 000 times the last year (February, 2018). Numbers are still increasing, as more e-learning tools are in production. Student evaluations performed in 2015-2017 indicate that the majority of BLS students' felt better prepared for hands-on tasks and also experienced more time for hands-on training and individualized guidance when offered a blended pre-learning approach. Similarly, teachers report less time spend on lecturing and more time spent on supervision. Sharing e-learning and information on an open access web page improves information to both students as well as supervisors in practical training.

CONCLUSIONS

Our preliminary results highlights the need for further exploration and development of blended learning approaches within the field of biomedical laboratory scientists' education. As such, innovative information and communication technology should be further developed to achieve student centred learning and to transform the BLS education.

ID: 14867 PIN: 122

CARBAPENEMASE - PRODUCING ACINETOBACTER BAUMANNII AND PSEUDOMONAS AERUGINOSA IN SELECTED TERTIARY HOSPITALS IN THE PHILIPPINES

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BACKGROUND-AIM

Development of multi-drug resistance in nosocomial infection causing bacteria such as Acinetobacter baumannii and Pseudomonas aeruginosa is increasing leading to problems in antibiotic management among hospitalized patients. In this study, we detected gene-causing resistance, blaOXA-23, blaNDM-1, blaIMP-1 and blaVIM-2, in carbapenem resistant A. baumanii (CRAB) and P. aeruginosa (CRPA) isolates.

METHODS

We used VITEK® 2 Compact to identify CRAB and CRPA and to test for antibiotic sensitivity. Resistance to carbapenem was retested using Kirby Bauer disk diffusion method. Molecular detection of the multi-drug resistance (mdr) genes was done through conventional polymerase chain reaction (PCR).

RESULTS

All CRAB (n=7) and CRPA (n=3) isolates harbored the blaOXA-23 (501bp). blaNDM-1 (621bp) was detected only in two (29%) CRAB and one (33%) CRPA isolates. In addition, blaIMP-1 (740 bp) was seen in five (71%) CRAB and two (67%) CRPA isolates. While BlaVIM-2 (865 bp) was present in two (29%) CRAB isolates. Some isolates contain multiple mbl genes in combinations of blaOXA-23 and blaIMP-1; blaOXA-23, blaNDM-1 and blaVIM-2; blaOXA-23, blaNDM-1 and blaIMP-1; and blaOXA-23, blaIMP-1 and blaVIM2.

CONCLUSIONS

This study concludes that blaOXA-23 is the most common mdr gene seen in the CRAB and CRPA isolates. Other genes, blaNDM-1, blaIMP-1 and blaVIM-2, were also detected. Moreover, multiple mdr genes were also detected in some isolates.

ID: 14921 PIN: 123

IMPROVING THE EFFECTIVENESS OF THE TUBERCULOSIS REPORTING AT A REGIONAL TEACHING HOSPITAL IN CENTRAL TAIWAN

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BACKGROUND-AIM

Tuberculosis is one of the most serious diseases in human history, and even today it is still a great threat to human health. The aim of this study was to introduce a PCR assay for the differentiation of M. tuberculosis and non-tuberculous mycobacteria (NTM) from clinical specimens to shorten the turnaround time for diagnosis, increase TB case detection and improve treatment outcomes at case hospital.

METHODS

In order to improve the effectiveness of the tuberculosis reporting, since 2017, the case hospital employed a variety of improvement programs, such as modifying the flowchart for diagnosis of TB and employing the GeneXpert MTB/RIF system. Based on the results of acid-fast stain (AFS) and chest-X ray, patients with AFS-positive or suspected of having tuberculosis were further confirmed by Xpert MTB/RIF assay. Data were calculated and analyzed using SPSS.

RESULTS

From January to December 2017, 227 clinical samples from patients suspected to have TB or with AFS-positive were tested with Xpert MTB/RIF assay; simultaneously, TB culture was used as the gold standard. The sensitivity and specificity of real-time PCR were 96.5% and 94.3%, respectively. The positive (PPV) and negative predictive values (NPV) for TB were 85.9% and 98.7%, respectively. However, nine cases were identified as a TB PCR-positive but culture-negative due to treatment or inappropriate sample handling, such as storage temperature and sample volume. NTM was identified in 48.2% (110 cases) from patients with an AFS-positive and a negative TB PCR. No patients with rifampicin resistance were detected. Additionally, turnaround times for real-time PCR test, AFS and TB culture methods were 4.6 (±2.0) hours, 8.3 (±11.9) hours and 40.9 (±18.0) days, respectively.

CONCLUSIONS

In consequence, this study showed that the diagnostic performance and treatment outcomes were improved by changing the diagnostic process and introducing Xpert MTB/RIF system in case hospital. The Xpert MTB/RIF assay for specimens can be useful to differentiate between NTM lung disease and pulmonary tuberculosis in the patients with AFS-positive sputum or suspected of having TB. Simultaneously, it can rapidly detect rifampicin resistance in clinical specimens.

ID: 15022 PIN: 124

MINIMAL VALUE OF 2% OGAWA MEDIUM IN ADDITION TO MGIT TUBES IN BACTEC MIGT 960 SYSTEM FOR MYCOBACTERIAL CULTURE

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BACKGROUND-AIM

Korean prevalence of active tuberculosis is very high as 1.0%. For standard of Mycobaterium tuberculosis (MTB) culture, the combined use of broth culture and solid media culture is recommended. We evaluated the value of 2% Ogawa medium (Korea Institute of Tuberculosis, Cheongju, Korea) in addition to Bactec™ MIGT 960 System (Becton Dickinson, maryland, USA) for MTB detection.

METHODS

For 1 year from September 2016 to August 2017, positive rates and contamination rates were analyzed by MTB culture methods. All specimens were prepared using mixtures of equal volumes of 2.9% sodium citrate buffer and 5% NAOH with N-acetyl-L-cysteine. Then the concentrated specimens were inoculated into both MIGT and 2% Ogawa media and cultured to 6 weeks and 8 weeks, respectively. Positive cultures were further tested using AdvanSure™ TB/NTM real-time polymerase chain reaction (PCR) test (LG Diagnostics, Cheongju, Korea) for identification of MTB.

RESULTS

Of 44,947 specimens, respiratory specimens were 34,253(76.2%) Total of 3,997 (8.89%) were positives in MIGT or Ogawa media. Among positive cultures, 1,069 (1.06%) were MTB and 2,926 (6.50%) were nontuberculous mycobacteria (NTM). Total of 2,361 (5.25%) comprising 726 MTB and 1,635 NTM were positive in both MIGT and Ogawa media, 1,404 (3.12%) comprising 324 MTB and 1,080 NTM in MIGT only, and 232(0.52%) comprising 21 MTB and 211 NTM in Ogawa media only. Nineteen of 21 TB from Ogawa only MTB-positive cultures were accompanied with the previous or later positive cultures. Two (0.2%) of 1,069 MTB-positive cultures were detected by Ogawa only and all of them were colon biopsy specimens. Contamination rates were 4.71% in MGIT and 3.88% in Ogawa, respectively.

CONCLUSIONS

2% Ogawa media has minimal value to detect MTB in addition to MGIT system in endemic countries with high prevalence of MTB.

ID: 15017 PIN: 125

ASSESSMENT OF THE EFFECTS OF UV IRRADIATION ON THE DETECTION OF MYCOBACTERIA TUBERCULOSIS BY MOLECULAR DETECTION

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BACKGROUND-AIM

Ultraviolet (UV) irradiation is one of the most common disinfection methods for inactivating microorganisms by destroying their nuclear acids, yet for identifying pathogenic microbes in clinical laboratory, this procedure would raise a prominent problem if a molecular diagnosis is carried out. The present study aims to assess the effect of UV irradiation on the molecular detection of Mycobacterium tuberculosis complex (MTBC).

METHODS

A polymerase chain reaction-based amplification of MTBC IS6110 gene, an insertion element found exclusively within MTBC members, and a subsequent on-chip DNA hybridization assay were leveraged for the molecular identification of MTBC. Detection sensitivity was obtained from diluted Mycobacterium tuberculosis strains during proficiency testing and clinical isolates without and with different UV exposure conditions were compared. Furthermore, a long-term follow-up for addressing the effect of UV irradiation on the accuracy of MTBC examinations in sputum specimens was performed.

RESULTS

The efficiency of MTBC IS6110 gene amplification reduced by one log after an exposure to 40 ⌈W/cm2 of UV irradiation for 30 minutes and further decreased when a longer or more intensive UV exposure was garnered. For acid-fast staining-positive sputum specimens that graded rare (δ1+) and moderate (2+~3+), post-UV irradiation TB DNA-positive rates were 0% and 40%, respectively. A longitudinal study revealed that the consistency of MTBC laboratory identification between culture and genetic methods was higher than 90% when specimens were deprived of UV irradiation but was below 80% when UV irradiation had been imposed on specimens for molecular diagnosis.

CONCLUSIONS

UV irradiation-mediated DNA breakdown is a big disturbance of molecular detection of MTBC.

ID: 15028 PIN: 126

UTILITY OF URINE AS A CLINICAL SPECIMEN FOR THE DIAGNOSIS OF PULMONARY TUBERCULOSIS IN PEOPLE LIVING WITH HIV IN ADDIS ABABA, ETHIOPIA

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BACKGROUND-AIM

Tuberculosis is a common causes of mortality and morbidity among peoples living with HIV/AIDS. Despite the increased prognosis of tuberculosis among HIV infected patients, the diagnosis of pulmonary tuberculosis (PTB) by conventional three Zeihl-Neelsen (ZN) stained smear examination shows negative due to low bacterial load in a sputum specimen of HIV patients. Having alternative specimens for increasing the detection of Mycobacterium tuberculosis (Mtb) is very important.

METHODS

A total of 117 HIV-seropositive individuals from three public health facilities in Addis Ababa, Ethiopia were enrolled consecutively from December 2013 to July 2014. A total of 117 paired morning sputum and urine samples were simultaneously collected from anti-retroviral therapy (ART) naïve individuals living with HIV and suspected for PTB. The collected samples were processed for culture using Lowenstein-Jensen medium and the left were subjected to PCR using RD9 primers. Chi-square test and kappa value were used to compare different method used.

RESULTS

Out of 117 suspected PTB HIV-infected individuals, sputum culture alone detected more mycobacterial isolates 33 (28.2%) than the urine specimen alone 17 (14.5%). Of 33 individuals positive for sputum culture, 13 individuals were observed to be urine culture positive. Of the 84 individuals negative for mycobacteria by sputum culture, four (4.8%) were urine culture positive and thus, the sensitivity and agreement between urine culture as compare to sputum culture were 39.4% and 0.49, respectively. On the other hand, the sensitivity of RD9-based PCR directly on urine was 72.7% by considering sputum culture as a reference standard. Moreover, RD9-based PCR directly on sputum detected 9(7.7%) individuals who were sputum culture negative for M. tuberculosis. The detection rate of M. tuberculosis from urine in patients those who couldn't produce sputum was 9(34.6%).

CONCLUSIONS

PCR and culture examination of urine for diagnosis of suspected PTB in HIV-infected patients were significantly improved the detection rate of M.tuberculosis.

ID: 15033 PIN: 127

FEASIBILITY, DIAGNOSTIC ACCURACY OF TUBERCULOSIS USING XPERT MTB/RIF ASSAY: A STUDY TO COMPARE WITH TRADITIONAL ACID-FAST STAIN SMEAR

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BACKGROUND-AIM

The traditional Acid-Fast Stain smear is difficult to accurately differential diagnosis of Tuberculosis. The Xpert MTB/RIF assay (Cepheid, Sunnyvale, CA, USA) can detect tuberculosis and its multidrug-resistant form. We aimed to evaluate the diagnostic accuracy of the Xpert MTB/RIF assay for the detection of M. tuberculosis in sputum specimens and compare it with Acid-Fast Stain (Ziehl-Neelsen method). We want to shorten the initial time of treatment.

METHODS

During a period of 36 months from August 2014 through August 2017, five hundred and thirty one clinically TB suspects were enrolled for Xpert MTB/RIF assay. Acid-Fast Stained smear microscopy, culture on LJ media and Xpert MTB/RIF assay were performed on sputum specimens from these patients. We assessed indicators of performance including sensitivity,specificity,positive predictive value (PPV) and negative predictive value (NPV).

RESULTS

Among the 531 specimens, 126 (23.7%) were M. tuberculosis (MTB) detected by Xpert MTB/RIF assay, 152 (28.6%) were smear positive on Acid-Fast staining and 116 (21.8%) were positive on LJ cultures. The sensitivity of Xpert MTB/RIF assay vs. Acid-Fast Stain was 95.7% vs. 82.8% in culture-positive patients. The specificity of Xpert MTB/RIF assay vs. Acid-Fast Stain was 96.4% vs. 86.5%. The PPV of Xpert MTB/RIF assay vs. Acid-Fast Stain was 85.4% vs. 63.2%. The NPV of Xpert MTB/RIF assay vs. Acid-Fast Stain was 98.8% vs. 94.7%. We followed the medical records of patients with smear-negative, Xpert MTB/RIF test positive, they definitely became tuberculosis. We found that the patients with smear-positive, Xpert MTB/RIF test negative, their culture was Nontuberculous mycobacterium. The use of Xpert MTB/RIF assay also reduced time to start treatment from 10 days to 3 days.

CONCLUSIONS

To compare Xpert MTB/RIF assay with Acid-Fast Stain, the Xpert MTB/RIF assay is a highly sensitive and specific test for early and accurately differential diagnosis of Tuberculosis, especially in smear negative cases. This can shorten the starting day of treatment to avoid the diagnostic delay.

ID: 15143 PIN: 128

IMPROVEMENT OF MYCOBACTERIUM TUBERCULOSIS CULTURE AND DRUG SENSITIVITY TURN AROUND TIME (TAT) BY ADOPTING LIQUID-BASED CULTURAL SYSTEM

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BACKGROUND-AIM

Tuberculosis is a global issue and causes morbidity and mortality in many countries. To combat Mycobacterium tuberculosis infections, a timely report of the culture result and sensitivity tests is critical. Traditional solid agar-based cultural systems require longer turnaround time. A liquid-based cultural system has been introduced and its turnaround time evaluated.

METHODS

A turnaround time (TAT) for Mycobacterium tuberculosis complex (MTBC) culture and identification is defined as time between initial sampling to report a positive MTBC for a culture. A TAT for MTBC drug sensitivity tests (DST) is defined as time between a positive MTBC from a culture to report MTBC drug sensitivity tests. The MTBC or DST TAT less than 28 days was defined as acceptable. The acceptable rate was monitored.

RESULTS

For MTBC TAT acceptable rate a national threshold was set at 65%. The MTBC TAT acceptable rates (performance) of the liquid-based culture system were 85.0 and 86.7% in 2015 ND 2016, respectively (2015 national average, 77.3%). The mean duration for MTBC DST was 19 (7-50) days in 2015. For DST TAT acceptable rate a national threshold was set at 90%. The DST TAT acceptable rate of the liquid-based culture system was 98.9%, 96.5%, and 97.3% in 2014, 2015, and 2016, respectively. However, before introducing the liquid-based system, the DST TAT acceptable rate of the solid agar-based culture system was 60.0% in 2012.

CONCLUSIONS

The Mycobacterium Tuberculosis culture and DST TAT was improved by introducing liquid-based cultural system.

ID: 15174 PIN: 129

PREVALENCE OF GONORRHEA INFECTION AND DRUG SENSITIVITY PATTERN AMONG PATIENT PRESENTING WITH GENITAL DISCHARGE IN THE OPD CLINIC AT MBARARA REGIONAL REFERRAL HOSPITAL

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BACKGROUND-AIM

Gonorrhea is the major cause of pelvic inflammatory disease, ectopic pregnancy, infertility, blindness in children and can facilitate HIV transmission (Whiticar etal, 2003). The prevalence and prediction of sexually transmitted diseases among rural clinics in Uganda found the prevalence of gonorrhea to be at 3% with highest prevalence of 8% among the age group between 20 to 24 years (CDC, 2002). Prevalence of Gonorrhea and drug sensitivity pattern among the patients attending OPD clinic at Mbarara Regional Referral Hospital was unknown. This study was conducted to establish the prevalence of gonorrhea infection and drug sensitivity patterns among patients presenting with genital (urethral and vaginal) discharge attending MRRH outpatient department clinic.This study provided information on management of patients presenting with genital discharge, early diagnosis and treatment of gonorrhea.The results for drug sensitivity pattern provided information on rational use of antibiotics.

METHODS

This was a cross-sectional study. Participants aged 18-45 years who visited OPD clinic with genital discharge were included in the study. Urethral swabs for males and endocervical swabs for females were collected by the attending trained physician. The presence of gonorrhea was confirmed by culture, gram staining reactions and biochemical tests. Antimicrobial sensitivity test was performed using disc diffusion method and the result was interpreted accordingly.

RESULTS

The prevalence of gonorrhea infection was 15.6%. Most of the participants isolated with Neisseria gonorrheae 4/7 (57.1%) were in age group of 21–25 years and the identified organism had a high sensitivity (100%) to Ceftriaxone, Cefoxitin, Imipenem and Gentamycin and a high resistance (57.1%) to ciprofloxacin, penicillin and tetracycline.

CONCLUSIONS

Continuous surveillance of susceptibility to the commonly used antibiotics is important in order to detect emergence of resistance early and control the possible wide spread of resistant strains.

ID: 15001 PIN: 13

MOBILE SATELITE FUNCTION

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BACKGROUND-AIM

Mobile satellite function
In the health service of the future the patient doesn't necessarily have to come to the hospital or be transported to it. In the Health service of the future, the biochemical department is more flexible and includes a collaboration with the doctors regarding diagnosis of the patient at home. That is one thing the biochemical division on Zealand, Denmark has come up with a solution to.
On my poster I will provide an example on, what it means to introduce mobile blood sampling as a satellite function under a biochemical division; both for the doctor, the Biomedical Laboratory Scientist (BLS), the patient and the bottom line.
The BLS goes out to where the patient is, at home or a nursing home and can collect a sample of blood or take an EKG. The samples are then brought back to the lab and analyzed, - ordered by the doctor or a clinical department. Both urgent and planned visits to the citizen are carried out and the answers to these tests are available the very same day.
The future for mobile blood sampling is most definitely progress ad evolution and includes a tighter collaboration between the home care service, nurses and doctors with regards to the patient. In this instance, it isn't the hospital which is the focal point, but for the patient and certain groups for patients - such as people with dementia, terminal cancer etc. - it can mean an easier day, but for healthcare professionals it also means;
On the poster I will provide different cases to show how the patient, the doctor and the welfare budget will benefit from the mobile satellite function;
- The quality of blood samples and EKGs are preserved, even if they are taken acute and at home.
- welfare budget
- patient welfare

METHODS

On the poster I will provide different cases to show how the patient, the doctor and the welfare budget will benefit from the mobile satellite function;
- The quality of blood samples and EKGs are preserved, even if they are taken acute and at home.
- welfare budget
- patient welfare

RESULTS

There is not any results yet - beside the results for the patients and the economic specter,

CONCLUSIONS

The doctor, the patient and the welfare budget will benefit with this satellite function.

ID: 15238 PIN: 130

EFFECTIVENESS OF POLYMERASE CHAIN REACTION IN DIAGNOSIS OF HANSEN'S DISEASE

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BACKGROUND-AIM

Hansen's disease is a chronic infection caused by Mycobacterium leprae. The traditional Slit Skin Smear (SSS) requires only blade sampling and microscopy by AFB, with sensitivity of only 20% to 30% (it is 56% in Taiwan). Tissue biopsy mainly provides the pathological classification of Hansen's disease, with high sensitivity and specificity. In recent years, polymerase chain reaction (PCR) technology used in detection of M. leprae has the superiority with high sensitivity, high specificity, high timeliness and without the need to cultivate the pathogen.

METHODS

Clinical sample source: The residents of Lo-Sheng Sanatorium of Ministry of Health and Welfare (Taiwan), patients of Hansen's disease clinics and screening cases of all counties. The patient's blood, skin smear and blade specimens were collected for PCR detection. DNA samples were used as template and combined with 0.5⌠M RLEP primers, 0.2mM dNTP, 2.0mM MgCl2 and 1⌠L polymerase then brought to a final volume of 25⌠l for PCR reaction. The thermal cycler program was 95°C 5 min, followed by 35 to 45 cycles of 94°C 30 sec, 58°C 30 sec, and 72°C 1 min, finished with 72°C 10 min. The fragment size of RLEP is 129 bp.

RESULTS

99 patients were enrolled, all diagnosed with Hansen's disease. 3 of them was clinic patients (3.0%), 41 (41.4%) were screening cases, 55 (55.6%) were the residents of the sanatorium. 55 males (55.6%) and 44 females (44.4%) were included with average age of 75 years. 24 cases (24.2%) were paucibacillary leprosy (PB) and 75 cases (75.8%) were multibacillary leprosy (MB). SSS was performed in all cases. Among them, 2 were positive (2.0%) and 97 were negative (98.0%). All SSS positive cases were new clinic patients under treatment. The positive rates of PCR were 0.0% (0/84) in blood, 0.0% (0/87) in blade and 1.5% (1/68) in slide, respectively. Ninety-six cases with complete treatment were tested negative by PCR and are consistent with the traditional SSS ($P<0.05$). Only one of the three new cases was positive in the slide PCR.

CONCLUSIONS

PCR method can be used as an effective tool to diagnose Hansen's disease. The glass slides after the microscopic examination can be directly used for PCR. The specimen should be with sufficient amount and stored frozen. However, taking medicine may cause DNA fragmentation and reduce the detection rate.

ID: 15239 PIN: 131

EFFECT OF PROANTHOCYANIDIN ON UROTHELIAL CELL DAMAGE BY UPEC INFECTION

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BACKGROUND-AIM

Some kind of Escherichia coli (E. coli) frequently isolated as a causative agent of urinary tract infection are strains called Uropathogenic E. coli (UPEC). UPEC is involved in recurrent urinary tract infections due to adhesion and invasion to the urothelial cell surface by type 1 pili. The previous study showed that proanthocyanidin A2 (PAC) of cranberry constituents can be used for the treatment of urinary tract infections (UTIs). However, the mechanism of treatment has not been fully elucidated. Therefore, we examined the effect of PAC on UPEC cell adhesion, invasion and cell death in this study.

METHODS

3 strains (BK1, BK2 and BK3) of UPEC were used as the experimental group. E. coli ATCC10538 (K-12) and ATCC25922 were used as the control group in this study. And HTB-9 was used as a cell line. Hemagglutination assay; The UPEC strains were adjusted to 10^9CFU/mL and standardized at OD600nm of 1.0. 3% guinea pig erythrocytes were mixed with equal volume of 2% D-mannose added on non-added solution. The presence or absence of aggregation of blood cells was confirmed after 15 minutes. Invasiveness inhibition assay; HTB-9 was infected for 3 of UPEC strains and the K-12. After that, bacteria on the cell surface were sterilized and the number of invading bacteria in the cell was counted. Cell viability assay; HTB-9 was infected with 3 of UPEC strains and the K-12. Surviving cells were stained with alamarBlue. As the number of viable cells increases, the color of the medium changes from blue to pink.

RESULTS

All bacterial strains did not aggregate in the presence of D-mannose and aggregated in the absence of D-mannose. However, when PAC was added, aggregation disappeared. K-12 did not invade HTB-9, however BK1, BK2 and BK3 strains invaded the cells. On the other hand, cell invasion by UPEC decreased with the addition of PAC. Cell viability was increased by the addition of PAC.

CONCLUSIONS

Since the aggregation of blood cells was suppressed by the addition of PAC, PAC was considered to inhibit the function of type 1 pili of UPEC. The results of invasion inhibition assay and cell viability assay showed that PAC increased cell viability by inhibiting cell invasion by UPEC. From these results, PAC reduces cytotoxicity by UTIs. We showed the effectiveness of PAC in the treatment of UTIs.

ID: 15242 PIN: 132

EFFECT OF FARNESOL ON BIOFILM FORMATION AND RELATED FACTORS OF PSEUDOMONAS AERUGINOSA

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BACKGROUND-AIM

Pseudomonas aeruginosa (P. aeruginosa) is known to show strong virulence against compromised hosts.
The farnesol is a quorum sensing molecule produced by Candida albicans (C. albicans) and has the effect of suppressing the morphological change from yeast of C. albicans to mycelia. C. albicans is also an opportunistic pathogen and is known to cause systemic infection.
Both bacterial species coexist to form biofilm in tracheal tubes, or are often isolated as polymicrobial from sputum. Therefore, the presence of both bacterial species results in difficult to treat respiratory infections. Previous studies have reported that farnesol produced by C. albicans suppresses the pyocyanin productivity of P. aeruginosa but there have been no reports on the effects on other pathogenic factors. Therefore,we investigated the effect of farnesol on not only pyocyanin productivity but also biofilm formation ability and related factors motility.

METHODS

We investigated the effects of farnesol on PAO1 and sputum derived P. aeruginosa clinical isolates. Pyocyanin was extracted from the culture supernatant of each strain and measured at OD 520 nm and quantitated. The biofilm forming ability was measured at OD 570 nm using a crystal violet method. Each motility (swimming, swarming, twitching) was evaluated by measuring the diameter of the zone formed on the medium.

RESULTS

In this study, we showed the amount of pyocyanin produced by P. aeruginosa which were decreased with farnesol. This result is consistent with previous study. An increase in biofilm formation was observed in four out of seven strains. In motility measurement, some of P. aeruginosa showed suppression in swarming and twitching.

CONCLUSIONS

In this study, the amount of pyocyanin was decreased by farnesol. Our result is identical of the previous report. The suppression of motilities was observed in some of P. aeruginosa. However, the increment in biofilm formation by farnesol was observed in many strains. This result suggested that the presence of C. albicans may enhance the pathogenicity.

ID: 14882 PIN: 133

DEVIATION BETWEEN INITIAL DIAGNOSES AND FINAL DIAGNOSES IN ADULT ALL PATIENTS

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BACKGROUND-AIM

Despite advances in immunophenotyping, molecular analysis and cytogenetic analysis, prompt diagnosis and treatment of acute leukemias still largely depends on the morphologic and cytochemical evaluation of blood smears. A significant morphologic feature distinguishing AML from ALL is the presence of cytoplasmic granules in blasts. A diagnosis of AML is crucial when more than 3% of blast cells are confirmed to be cytochemically MPO positive. This study charts the consistency between the initial and final diagnosis in ALL patients.

METHODS

The study consists of 11 adult ALL patients who were diagnosed at Fukuyama city Hospital between 2011 and 2017 by flow cytometric evaluation, immunohistochemical analysis and chromosome analysis. We retrospectively investigated two areas: morphologic examination and cytochemical analysis (MPO and PAS). We regarded the results of the morphology and the MPO stain as the initial diagnosis, because they were received within one day of the bone marrow aspirations. With flow cytometric analysis being outsourced at our hospital, the assay work can be time-consuming.

RESULTS

All 11 ALL cases were negative for MPO. 4 of 11 cases could be typed as ALL-L3 in the FAB classification by morphology, and they were consistent with the final diagnosis except for 1 case. 6 cases required the distinction of AML-M0, because there were either no or very slight cytoplasmic granules in blasts. 1 case showing a number of cytoplasmic granules in blasts was misdiagnosed as AML-M5 in the initial diagnosis. Minus the 4 L3 cases, 4 of the remaining 7, including one misdiagnosed as M5, showed that the cytoplasm was positive for PAS reaction in a dot pattern. This indicates that PAS reaction may provide support for ALL, even if initially misidentified as AML.

CONCLUSIONS

Numerous cytoplasmic granules in blasts led to a misdiagnosis as AML. Even if there are cytoplasmic granules in blasts, only 2 cytochemical markers (MPO-negative and PAS-positive) may be useful in diagnosing ALL. These cytochemical markers are especially important when flow cytometric analysis is outsourced.

ID: 14929 PIN: 134

ASSOCIATION OF MEDICAL LABORATORY SCIENTISTS OF NIGERIA @54;NEW CHALLENGES, NEW OPPORTUNITIES

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BACKGROUND-AIM

The Association of Medical Laboratory Scientists of Nigeria was established by few men in Lagos in March 1964.Its precursor was the African Laboratory Technical Staff Association formed in the early 1920s also in Lagos which later metamorphosed into the Association of Technical Assistants in the 1940s.The main reason for the formation was " to advance the interests of members".The Association was formally registered in 1992 as a non governmental, non-religious,nonpartisan civil professional organisation whose vision is to enhance quality health care through Medical Laboratory Science.It became a financial member of IFBLS in 1994.
The aim of this presentation is to appraise the pattern of growth and development of the MLS profession and AMLSN in Nigeria.

METHODS

Retrospective review of data and information from 1920s to 2017.Oral interview and questionnaire served on some members of AMLSN and Medical Laboratory Science Council of Nigeria(MLSCN).

RESULTS

There were less than 300 MLS at Niigeria's independence in October 1960 but today there are about 11091 in good standing on register.They are classified as Associates and Fellows. Many of these have higher degrees (MSc and Phds). Most of these professionals practice in hospital clinical laboratories, some in research institutions while a few are finding jobs in the growing number of Universities and other training institutions.

CONCLUSIONS

DISCUSSIONS
The driver for this growth was the change of training mode and adoption of an entirely new pathway for entry into profession.There are now over 20 Universities offering 5 year professional degree in MLS.The Nigerian government had accorded the profession full-regulatory status by establishing the Medical Laboratory Science Council of Nigeria (MLSCN) through an Act of Parliament in 2003.
In conclusion this presentation chronicles the rapid growth of AMLSN from its humble beginnings with unsophisticated interests to its present position where it is now a formidable force working at the highest level of policy making,raising the profile and influencing decisions that shape the profession;impacting its members and contributing to enhancing healthcare in Nigeria.

ID: 14993 PIN: 135

GLOBAL PERSPECTIVE OF MEDICAL LABORATORY PRACTICES: MAJOR CHALLENGES, CONTROVERSIES AND POSSIBLE SOLUTIONS

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BACKGROUND-AIM

The historical journey of the laboratory diagnosis is directly associated with the story of medicine's evolution from experiential to evidence based laboratory medicine. The clinical laboratories are playing an indispensable role in modern health care delivery system which has direct impact on the lives of millions of people worldwide. More than 70% of the medical decisions related to admission, diagnosis, treatment and discharge are merely based on clinical laboratory investigations. There are multifarious scientific process and activities carried out in a clinical laboratory by the chain of medical laboratory professionals i.e. medical laboratory technologists, medical laboratory scientists and specialist medical doctors of respective laboratory fields and any flaw in complex laboratory process could have adverse consequences health outcomes. However, there is growing consensus on accreditation through ISO 15189:2012 yet medical laboratory professional education, practices and professional standards are still very diverse globally. The purpose of study was to evaluate medical laboratories regulatory framework, accreditation models,laboratory science education and lab practices around the World.

METHODS

Literatures related to laboratory regulations and accreditation model of various countries reviewed to evaluate various important issues of medical laboratory profession & professionals.

RESULTS

After detailed analysis, it has been found that there are variable model of professional courses, curriculum, duration of courses, lab services, scope of practices and regulatory framework exists around the World.

CONCLUSIONS

However, world-wide the basic job role of medical laboratory professionals are identical. They are playing an important role in diagnosis, treatments and prevention of diseases, nonetheless there is a diversified scenario regarding their professional qualification, curriculum, nomenclature of courses, duration of courses, scope & right of practice, accreditation and regulatory model for professional services, career pathway etc. which poses a serious challenge for patient safety and quality of lab services. Hence, International professional bodies of lab sciences should come forward for standardization, harmonization and augmentation of clinical lab services.

ID: 15073 PIN: 136

CELEBRATING THE INTERNATIONAL BIOMEDICAL LABORATORY SCIENCE DAY IN NORWAY – THE RECENT 5 YEARS' EXPERIENCE

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BACKGROUND-AIM

International Federation of Biomedical Laboratory Science (IFBLS) established The International Biomedical Laboratory Science Day (BLS Day) in 1996 at the World Congress in Oslo, Norway. The idea was to promote and celebrate the excellent work provided by Biomedical Laboratory personnel in diagnostic and preventive health care systems. The purpose with the BLS Day is to increase the awareness of the role that Biomedical Laboratory Scientists have in providing health care. Biomedical Laboratory Scientists play a key role in diagnosis, quality development and assurance, treatment, research and development in the modern medical science.

METHODS

The BLS Day has a specific theme, selected by the IFBLS Board of Directors, which is related to health issues and support the United Nation and World Health Organization
Sustainable Development Goals. The theme is chosen for a two-year period. In 2017 and 2018 the topic is Antibiotic resistance. NITO The Norwegian Institute of Biomedical Science (NITO BFI) provides funding opportunities, where laboratory units can apply for funding to celebrate the BLS Day in their chosen manner. Some have lunch or afternoon meetings including lectures. Some units have exhibitions to present the work done in medical laboratories, and the BLS`s often wear T-shirts profiling Biomedical Laboratory Scientists.

RESULTS

Many hospital units and laboratories applies for funding to celebrate the BLS Day. The BLS staff is proud to present the work they do in medical laboratories and its importance for diagnosis, treatment and follow-up of disease.
In 2013 222 321 NOK was distributed to a total of 29 local activities.
In 2014 142 818 NOK was distributed to a total of 23 local activities.
In 2015 171 593 NOK was distributed to a total of 33 local activities.
In 2016 180 412 NOK was distributed to a total of 36 local activities.
In 2017 152 277 NOK was distributed to a total of 35 local activities.

CONCLUSIONS

In the period 2013 to 2017, NITO BFI has distributed nearly 900 000 NOK to nearly 160 different activities or arrangements all over Norway. The number of activities are steadily increasing.
The BLS Day helps promote the BLS profession towards patients, other health personnel and the community. It also promotes pride within the BLS profession and highlights our importance.

ID: 15111 PIN: 137

THE PROCESS OF CREATING CIVILITY NORMS

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BACKGROUND-AIM

In January 2018, we conducted a work environment seminar as part of our continous improvement programme. All 150 employees in the Department of Medical Biochemistry, located at Rikshospitalet University Hospital were invited and there were 55 participants.

METHODS

The seminar consisted of a lecture on work environment and organisational culture, followed by a group assignment. There were seven groups in total, each with members representing different positions and professions. The assigned task was to find norms and «rules» that are important to them in maintaining a good work environment. Each group's top three rules were then presented to the other groups.
Later, a focus group was formed, consisting of five members: union representative, HSE representative, two staff members and a management representative. Their task was to sort and analyze the ideas from the seminar and create written norms for the department. The norms were made into a poster with a design meant to be visually appealing, easy to read and lifting the spirit.
By inviting everyone to participate in the seminar we were able to create consensus and ownership to the final product: a poster of our organisational culture and its norms.

RESULTS

The poster contains the following civility norms:
~We smile and greet each other regardless of profession or position.
~Take responsibility –offer your help whenever possible.
~Nobody shall be ridiculed.
~We do not talk behind each others back –talk to the person concerned.
~Do not discuss with each other in front of patients.
~We are open for professional disagreements and discussions –we differentiate between person and case/subject.
~We can safely report any mistakes –we always communicate non-aggressively.

CONCLUSIONS

The civility norms were presented for all employees for discussion and agreed upon. Then, the poster was distributed around the laboratory and implemented.

ID: 15142 PIN: 138

ROLE OF BLS BEYOND THE HOSPITAL

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BACKGROUND-AIM

It is well known that Laboratory Medicine has important role for decision making to medical treatment and care for patients. From this point of view, working field of Biomedical Laboratory Scientists(BLS) role is not only hospital but also out side of hospital such as Home health care and disaster medicine.

METHODS

Home health care is getting important in Japan, due to increasing number of elderlies. There are eternally wish to all of people to spend their life with healthy condition. In the sight of this fact to know health condition in real time is good way to keep healthy condition for the home health care receivers. However to check health condition is not easy to thesm because they have to visit to hospital, clinic or health station to obtain reliable data.

RESULTS

Japanese BLS has solution to this matter. Japanese BLS received national license from Japanese government when they pass the national examination that controlled by Ministry of Health, Labor and Welfare. Japanese BLS are able to do not only laboratory test but also specimen collection such as phlebotomy, surface skin, mucous membrane and purulence. Furthermore, they are allowed to do several physiological tests such as Electrocardiogram and Ultrasonography. These professional knowledge and skills are useful ability to the Home health care.

CONCLUSIONS

In this presentation, I will introduce the role of BLS and how to contribute to outside of hospital with several examples.

ID: 15220 PIN: 139

REGIONAL LABORATORY WORKFORCE DEVELOPMENT: KEY DRIVER TO GLOBAL HEALTH SECURITY

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BACKGROUND-AIM

The International Health Regulations (2005) require each State Party to develop, strengthen and maintain, the capacity to prevent, detect, assess, notify and report public health events within their territory in accordance with the provisions of the Regulations. Laboratory personnel and services play a crucial role in the prevention, detection, surveillance, diagnosis, treatment and management of diseases in the community. The strategy for developing professional capacity across regions and in the West African sub-region in particular is the aim of this study.

METHODS

The leaders of the Associations of Medical Laboratory Scientists in some Anglophone and Francophone countries of West Africa and Cameroon in a series of consultation meetings resolved to set up the West African Postgraduate College of Medical Laboratory Science, which will coordinate the training, examination and award of Specialist Diplomas to Biomedical laboratory scientists who have undergone the prescribed postgraduate hospital and industry-based training and passed the examinations of the College in a chosen specialty of biomedical laboratory science. A multilingual training curriculum for the 15-member countries and Cameroon was developed. Checklist for selecting hospitals in each country within the region for training enrollees was designed. Collaboration with Centers in advanced countries for short periods of attachment of trainees for acquisition of specialized skills lacking within the region would be fostered.

RESULTS

The College will engender a sustained development of the expected skill mix of specialized biomedical laboratory scientists in the region. The specialists will facilitate the achievement of global health agenda in the region, through prompt detection, effective diagnosis and control of epidemic and pandemic-prone diseases in the region.

CONCLUSIONS

Disease outbreaks have proved more than any other event that our humanity and destinies are tied together. National boundaries cannot protect man from the ravages of epidemics and pandemics. Regional laboratory workforce development is key to ensuring global health security. The IFBLS as a global professional body needs to play a major role in the advocacy and implementation of the activities for the achievement of global health security.

ID: 15016 PIN: 14

IMPLEMENT A SPECIMEN BARCODING MANAGEMENT SYSTEM TO MANAGE THE QUALITY OF PRE-ANALYTICAL PHASE OF TESTING

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BACKGROUND-AIM

The pre-analytical phase of the total testing process (TTP) is much more vulnerable to errors than all other steps. In 2013, Centers for Disease Control, Taiwan promote Antimicrobial Stewardship Program (ASP) and the audit items include the sampling inspection time, the laboratory records the time of receipt, and shorten the delivery time of the sample. Furthermore, Taiwan Laboratory Indicator Series (TLIS) also contains a number of quality indicators (QIs) in the pre-analytical phase. So, we established a barcoding management system to monitor the procedures of specimen collected, delivery and receipt of ED and inpatient specimen.

METHODS

We designed barcode format and determined the system functionality and then the programmer planning Data Flow Diagram (DFD) and programming. The management system was implemented in December 2016 and officially opened in February 2017. Automated patient specimen and laboratory testing identification and tracking use barcoded specimen and barcode scanner and link specimens and tests to a patient throughout the entire testing process including test ordering, specimen collection and analysis.

RESULTS

The system can record the process of samples collected to the receiving and have other features. It can improve the efficiency and correctness of specimen received.We estimated the average value of each pre-analytical quality indicators from July 2017 to December 2017 and compare with IFCC project. The rate of misidentified samples was 0.011% (25th percentile), unlabeled samples was 0.0347% (50th percentile), inappropriate sample type was 0.0062% (75th percentile), the wrong container was 0.0227% (75th percentile), samples not received was 0.0077% (25th percentile), samples damaged during transportation was 0.0003% (25th percentile) and samples with excessive transportation time was 0.0075% (75th percentile).

CONCLUSIONS

As a result, some of the indicators were found to be higher than previously because the management system can monitor and record effectively from collecting centers to the laboratory. Barcode specimen collection can virtually eliminate patient identification and specimen labelling errors during collection. Through barcode specimen collection and management system improve the quality of pre-analytical.

ID: 15308 PIN: 140

BIOMEDICAL SCIENTISTS IN EUROPE: THE HEALTH OF THE PROFESSION

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BACKGROUND-AIM

Biomedical Scientists in Europe are a Regulated Profession. One measure of the health and vibrancy of a profession is the interaction between members of the profession and their representative bodies.

METHODS

A survey undertaken by the European Association for Professions in Biomedical Science (EPBS), using google forms as tool, of its 21 county members examined the numbers of Biomedical Scientists, Qualifications to practice, membership of Professional Associations and the services provided for the scientists.

RESULTS

We found that for 20 countries with a population of 428 million inhabitants there are 254,504 Biomedical Scientists or an average of 828 Biomedical Scientists / 1million inhabitants.
This number varies depending on the country with a range of 350 to 1300 / 1 million. The higher ratio tends to be seen in Nordic countries where the Biomedical Scientists have a broader scope of practice.
The entry level qualification to practice is Bachelors (180 to 240 ECTS) for 17 of the 20 countries with the remaining 3 being secondary or post-secondary level. A permit or licence to practice is required in 15 of the 20 countries and this is provided by government, regulator or the Professional Body.
Using participation or membership of the professional organisation as a measure of the health of the profession we see a membership span of between < 25% to 100%. The level of participation in the professional organisation is, in some way, related to the number of employees in the association and the services it offers to its members. Services offered may depend on the type of professional association; be it union with negotiating rights or professional association focusing on scientific advancement. Unions attract higher membership than professional associations. Voluntary associations who set educational standards have a higher membership than those who do not.

CONCLUSIONS

The long-term sustainability of EPBS, IFBLS and other umbrella organisations is dependent on the ability of their membership to support them financially and with human capital. Vibrant member associations with vibrant membership will ensure the continuance of these umbrella organisations and the ability of this profession to influence European and International health policies.

ID: 15412 PIN: 141

DEVELOPMENT OF SUSTAINABLE COLLABORATION BETWEEN INTERNATIONAL PARTNERS – BLS AT CAPE PENINSULA UNIVERSITY OF TECHNOLOGY (CPUT) AND WESTERN UNIVERSITY OF APPLIED SCIENCES (HVL)

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BACKGROUND-AIM

BACKGROUND
Internationalization is one of five central area in the strategic plan for HVL (Western Norway University of Applied Sciences). The program of BML at Western University of Applied Sciences (HVL) started 2008 a cooperation with the BML program at Cape Peninsula University of Technology (CPUT). This cooperation involved student exchange both ways. Third year students from CPUT stayed for practical training (3 months) in Bergen, Norway and third year students from HVL did their Bachelorthesis (3 months) at CPUT. Few persons was involved in organizing the collaboration and it therefor was vulnerable. It needed to be strengthened.

METHODS

Developing project in 2010 to prepare tutors for guiding english speeking students in practical traing. In 2017 the BLS program at HVL got money from SIU`s UTFORSK program to devlop the Cooperation innvolving meetings, students Exchange, Teachers Exchange and planning of reasearch.

RESULTS

The development project UTFORSK, has strengthened the ongoing cooperation between the BLS-program at CPUT and HVL. Two students from CPUT did their practical training in clinical laboratories in Bergen Fall 2017. Two students from HVL have done their pratical training at laboratories in Cape Town spring 2018. Six BLS students from HVL will be doing their Bachelor thesis at CPUT spring 2018. Research collaboration has been initiated between academic staff in the two programs and a new cooperation agreement has been prepared.

CONCLUSIONS

Two different developing projects (2010 and 2017) have resulted in a strengthening and further development of cooperation between the program of BMLS at CPUT and HVL. By involving more academic staff and include research in the collaboration, it has taken a step further and to a new level.

ID: 14780 PIN: 142

APPLICATION OF CONFOCAL MICROSCOPY WITH TISSUE CLEARING SYSTEM TO CLINICAL DIAGNOSIS IN MOLECULAR PATHOLOGY

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BACKGROUND-AIM

Confocal Microscope and its various applications for observing specific molecules with additional information: molecular localization, intermolecular colocalization, translocalization of target molecules and z-section images of cells, tissues and biophysical materials for convergence medical science have been well studied for the last decades. Nevertheless, this fundamental research tool has been barely introduced to biomedical laboratory scientists and rarely used for clinical pathology diagnosis. Recently introduced tissue clearing method was also spotlighted due to its capability to increase clarity of tissue samples by removing lipid and diminish background signals caused by unnecessary lipid on tissues during fluorescence staining. In this study, we introduce how to apply these research tools to clinical diagnosis in molecular pathology.

METHODS

To this end, Leica TCS SP8 confocal microscope was used for 2D images, z section images for 3D rendering, intermolecular interaction and translocation of target molecules in cells. For tissue clearing to interrogate physiological changes of samples, X-Clarity Tissue Clearing System, LogosBio was utilized. The images taken from confocal microscope were analyzed using MetaMorph, Molecular Devices for nuclear count, fluorescence intensity comparison and image deconvolution.

RESULTS

Confocal microscope images showed higher resolution compared to wide field fluorescent microscope images. Mitochondria and lysosome of HEK293 and HeLa cells were clearly observed with 250nm of resolution. Colocalization between dysfunctional mitochondria and lysosome caused by stress which leads to autolysosomal degradation was also clearly observed and number of each molecules were calculated by image analysis software. Paraffin tissues and lipid clearing tissues showed different z section imaging thicknesses by different laser traveling distances with extremely improved S/N ratio.

CONCLUSIONS

To sum up, Confocal microscopy and tissue clearing method are fundamentally useful for clinical pathology and biomedical research. However, these advanced techniques have rarely introduced to medical laboratory practitioners with reference to examination for diagnosis in clinical pathology. Here, we suggest various application and examples of confocal microscopy and tissue clearing system.

ID: 14818 PIN: 143

NDST4 EXPRESSION MODULATES TUMORIGENESIS AND MACROPHAGE POLARIZATION IN COLORECTAL CANCER

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BACKGROUND-AIM

Allelic deletion of tumor suppressor genes (TSGs) is common to human cancers. In the study, we aimed to explore novel TSGs at chromosome 4q25-q28.2 and then delineate novel prognostic biomarkers associated with colorectal cancer (CRC). In addition, we investigated the tumor suppressor functions mediated by the putative TSG identified.

METHODS

Deletion mapping of chromosome 4q25-q28.2 was conducted in CRC by loss of heterozygosity (LOH) study. A candidate TSG, namely NDST4, was identified at 4q26. Allelic loss of NDST4 gene in CRC was directly determined by LOH analysis and then assessed for clinical relevance. To study the roles of NDST4 in CRC tumorigenesis, we generated an Ndst4-knockout mouse strain to conduct azoxymethane/dextran sodium sulfate models for colitis-associated cancer (CAC). Inducible NDST4 expression was established in human CRC cell line HCT116. Tumor suppressor functions of NDST4 were investigated via cell proliferation, anchorage-independent growth and invasiveness assays. The conditioned medium (CM) harvested from NDST4-expressing CRC cells was examined for the effects on macrophage polarization. Macrophage differentiation was examined via morphological changes and marker expression by qRT-PCR and flow cytometry.

RESULTS

In total, 53 (30.5%) of 174 sporadic CRC were positive for allelic loss of NDST4 gene. The genetic aberration was significantly associated with poor survival of patients (P=0.036). In the CAC models, Ndst4-deficient mice produced more and larger tumors, in which Foxp3 expression was significantly higher and those of proinflammatory genes (TNF-〈, COX2 and CXCL1) were much lower when compared with their wild-type littermates. In addition, CRC cells with inducible NDST4 expression exhibited a significant decrease in cell proliferation, anchorage-independent growth and invasiveness. Of notes, the CM from NDST4-expressing CRC cells promoted the differentiation of M1-polarized macrophages.

CONCLUSIONS

NDST4 is a novel TSG in human cancer, and loss of its function is involved in CRC progression and modulation of immune response and macrophage polarization in tumor microenvironment. In addition, the LOH assay of NDST4 gene established in the study could be a cost-effective tool for providing a useful biomarker of adverse prognosis in CRC.

ID: 14852 PIN: 144

THE MODULATION OF ERK½/JNK/P38K SIGNAL TRANSDUCTION BY HIBISCUS TAIWANENSIS EXTRACTS ON BREAST CANCER CELLS

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BACKGROUND-AIM

Epidemiological studies have indicated that breast cancer is one of the leading cancer of death in Taiwan. At patient, surgical therapy and chemotherapy are the major strategies for the cure of breast cancer. The chemotherapeutic drugs are usually designed to induce cancer cell death via cell cycle arrest and/or apoptosis pathways.

METHODS

In this study, we used extracts of Hibiscus Taiwanensis to inhibit breast cancer cell proliferation and tumor growth, and investigate the underlying molecular mechanisms. Human breast cancer cell lines (MCF-7) was used in this study, and apoptosis was evaluated by flow-cytometry. ERK½/JNK/p38k proteins were analyzed by western blots.

RESULTS

The results indicated that Hibiscus Taiwanensis extracts significantly decreased cell proliferation by a dose-dependent manner in cells. Flow-cytometry demonstrated that Hibiscus Taiwanensis extracts induced cell cycle arrest at G0/G1 phase. Hibiscus Taiwanensis extracts increased ERK½/JNK/p38k proteins in a dose-dependent manner.

CONCLUSIONS

These results suggest that Hibiscus Taiwanensis extracts could inhibit human breast cancer cell proliferation and tumor growth, and might be a potential drug for chemotherapy.

ID: 15120 PIN: 145

GENETIC VARIANTS INCREASING SERUM PEPSINOGEN 2 LEVEL IN GASTRIC CANCER

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BACKGROUND-AIM

Serum pepsinogen 2 (sPG2) level is one of the predictive parameters for gastric cancer (GC) risk but factors that regulate change in PG2 expression are still unknown. Aim of the present study was to investigate genetic variants that may regulated PG2 expression in patients with GC or at risk for GC (i.e. first-degree relatives of GC or autoimmune atrophic gastritis) and patients with or without Helicobacter pylori (H. pylori) infection.

METHODS

284 individuals: 83 with GC, 64 with autoimmune atrophic gastritis (AAG), 78 first-degree relatives of patients with GC (FDR-GC) and 59 individuals without GC nor AAG confirmed by biopsies, as controls (CTRL) were tested for serum pepsinogens and gastrin concentrations, for IgG anti-H. pylori level, and for PG2 and miRNA polymorphisms (Institutional Review Board no. 14).

RESULTS

A relationship between an increase of sPG2 level with GC, and in particular in patients with H. pylori infection was found. This relation was linked with the GAG haplotype (34.9% of GC patients), that included the polymorphisms of PG2 rs947164, miRNa Let-7e rs8111742 and miRNA 4795 rs1002765, and the longest size of PG2 TATA-box fragment.

CONCLUSIONS

This study extends knowledge regarding the increased of sPG2 expression in GC and its relation with H. pylori infection.

ID: 14946 PIN: 146

THE MODULATION OF SIGNAL TRANSDUCTION PATHWAY BY BROMELAIN IN HUMAN PROSTATE CANCER CELL

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BACKGROUND-AIM

Surgical therapy and chemotherapy are the major strategies for the cure of prostate cancer. The chemotherapeutic drugs are usually designed to induce cancer cell death via cell cycle arrest and/or apoptosis pathways.

METHODS

In this study, we used bromelain to inhibit prostate cancer cell (LNCaP) proliferation and tumor growth, and investigate the underlying molecular mechanisms. Human prostate cancer cell line was used in this study, and apoptosis was evaluated by flow-cytometry. caspase3/8/9, Parp and cyt-C proteins were analyzed by western blots.

RESULTS

The results indicated that bromelain significantly decreased cell proliferation by a dose-dependent manner in cells. Flow cytometry demonstrated that complex Chinese herbs extracts induced cell cycle arrest at G2/M phase. When analysis the expression of cell cycle-related proteins, we found that Bromelain increased caspase3/8/9, Parp and cyt-C in a dose-dependent manner.

CONCLUSIONS

These results suggest that bromelain could inhibit human prostate cancer cell proliferation and tumor growth, and might be a potential drug for chemotherapy.

ID: 14948 PIN: 147

THE INHIBITION OF LIVER CANCER CELLS VIA APOPTOTIC SIGNALS MODULATION BY GONODERMA LUCIDUM EXTRACTS

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BACKGROUND-AIM

Gonoderma lucidum, a tree fungus to Taiwan, has been published recently for multiple medical purposes as an effective treatment as folk medicine for cancer therapy and hepatoprotection. However, no reference was published for investigating the anti-cancer effects for lung cancer. Epidemiological studies have indicated that lung cancer is one of the leading cancer of death in Taiwan. At patient, surgical therapy and chemotherapy are the major strategies for the cure of lung cancer. The chemotherapeutic drugs are usually designed to induce cancer cell death via cell cycle arrest and/or apoptosis pathways.

METHODS

In this study, we used an extracts of gonoderma lucidum extracts to inhibit lung cancer cell proliferation and tumor growth, and investigate the underlying molecular mechanisms. Human lung cancer cell lines (A549) was used in this study, apoptosis was evaluated by flow-cytometry. Caspase3/7/9 and PARP proteins were analyzed by western blots.

RESULTS

The results indicated that gonoderma lucidum extracts significantly decreased cell proliferation by a dose-dependent manner in cells. Flow cytometry demonstrated that gonoderma lucidum extracts induced cell cycle arrest at G0/G1 phase. When analysis the expression of cell cycle-related proteins, we found that gonoderma lucidum extracts increased caspase3/7/9 and PARP in a dose-dependent manner.

CONCLUSIONS

These results suggest that gonoderma lucidum extracts could inhibit human lung cancer cell proliferation and tumor growth, and might be a potential drug for chemotherapy.

ID: 14949 PIN: 148

THE MODULATION OF SIGNAL TRANSDUCTION PATHWAY BY GREEN TEA POLYPHENOLS ON COLON CANCER CELLS

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BACKGROUND-AIM

Green tea polyphenols has been published recently for multiple medical purposes as an effective treatment as cancer therapy. The potential anti-carcinogenesis-effect from green tea polyphenols was confirmed by our previous study. However, no reference was published for investigating the anti-colon cancer by the potential anti-carcinogenesis-effect extracts.

METHODS

In this study, the inhibition of colon cancer cell proliferation and tumor growth by green tea polyphenols was performed to investigate the underlying molecular mechanisms. Human colon cancer cell lines (SW620), and apoptosis was evaluated by flow-cytometry. caspase3/8/9 and BCL proteins were analyzed by western blots.

RESULTS

The results indicated that green tea polyphenols significantly decreased cell proliferation by a dose-dependent manner in Human colon cancer cell lines (SW620). Flow cytometry analysis demonstrated that green tea polyphenols induced cell cycle arrest at G0/G1 phase. green tea polyphenols increased the apoptotic protein caspase3/7/9 and decreased the anti-apoptotic protein BCL in a dose-dependent manner.

CONCLUSIONS

These results suggest that green tea polyphenols could inhibit human colon cancer cell proliferation and tumor growth, and might be a potential drug for chemotherapy.

ID: 14967 PIN: 149

ALPHA-FETOPROTEIN PRODUCING GASTRIC CANCER

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BACKGROUND-AIM

Alpha-fetoprotein (AFP)-producing gastric carcinoma is a rare type of gastric cancer

METHODS

The present study reports a54-year-old patient with this type of gastric cancer. He had chief complaints of epigastric pain and body weight loss. A laboratory investigation revealed that the serum AFP levels were elevated to 16.390 ng/ml (normal level, <12.00 ng/ml), and the serum carcinoembryonic antigen (CEA) levels were 108 ng/ml (normal range, <5.00 ng/ml). An endoscopy revealed an elevated tumor which was biopsied, and showed poorly differentiated adenocarcinoma. Computer tomography revealed multiple metastasis .AFP-producing gastric cancer was diagnosed.

RESULTS

His tumor tissue was assayed for Her2, and was reported as 3+. Since his tumor was unresectable, he was treated with chemotherapy and trastuzumab. After the therapy was completed, his follow –up CT revealed complete remission of his liver metastasis and the caner at the primary site.

CONCLUSIONS

We report a case of alpha-fetoprotein producing gastric cancer treated with chemotherapy in combination with target therapy resulting in complete response.
We consider this rare case to of significant value with respect to the treatment of alpha-fetoprotein producing gastric cancer with multiple liver metastasis. Our therapeutic modality is safe, and is worth further investigation.

ID: 15021 PIN: 15

MULTI-TISSUES CONTROL IN IMMUNOHISTOCHEMICAL ASSAYS; STORAGE CONDITIONS AND ANTIGEN PRESERVATION

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BACKGROUND-AIM

Loss of antigenicity in stored paraffin sections used in immunohistochemistry (IHQ) assays are reported due to temperature, lighting conditions, tissue oxidation may affect negatively both histopathological and advanced molecular studies. Standardize immunostaining procedures is even more relevant in this personalized medicine era with theragnostic biomarkers as estrogen receptor (ER), Human Epidermal growth factor Receptor-type 2 (HER2/neu) or Programmed death-ligand 1 (PD-L1).
The aim is to characterize the best storage conditions comparing specific antigen staining variability on pre-adherent multi-tissue controls (MTC) and daily fresh tissue sections (same slide), exposed to different storage conditions as temperature and time.

METHODS

Eight human tissue paraffin blocks knowing to express different antigen (Ag) intensity were cut at 4 µm sections and mounted on glass slides. Immunostaining was performed with an in-house optimized protocol, and Ag localization visualized by a brown color. Different storage conditions were evaluated as room temperature (RT) and 37ºC, at time intervals being time 0 (control), 15 days, 1 and 2 months, with primary antibodies (Ab) against anti-human ER, HER2/neu, and PD-L1.
Slides staining intensity were evaluated for variability, between stored sections and daily fresh tissue sections on the same slide prior to stain, by three independently observers proficient in this methodology in a blind way with a light microscope.

RESULTS

Slides stored up to 1 month at RT and at 37°C show intense and specific staining (8/8), similar between in all biomarkers. Packing at 2 months show lower expression in HER2/neu, (7/8), PD-L1 (6/8) and partial or total fall off in daily fresh sections (7/8).

CONCLUSIONS

Our results suggest that storage beyond 1 month, is not a reliable option. Daily fresh tissue loss without loss in the MTC stored after1 month suggest alterations in glass slides surface adherence.
Storage of MTC at RT and at 37 °C produce intense and specific immunostaining without disrupted morphology, being reliable to use this procedure on multi-tissue controls in IHQ assays during up to one month.

ID: 14970 PIN: 150

EXOSOMES DERIVED FROM SW480 COLORECTAL CANCER CELLS PROMOTE CELL MIGRATION IN HEPG2 HEPATOCELLULAR CANCER CELLS VIA THE MITOGEN-ACTIVATED PROTEIN KINASE PATHWAY

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BACKGROUND-AIM

Exosomes are membrane-derived extracellular vesicles that have recently been recognized as important mediators of intercellular communication. In the present study, we investigated the effects of exosomes derived from SW480 colorectal cancer cells in recipient HepG2 hepatocellular cancer cells.

METHODS

SW480-derived exosomes were labeled with the PKH67 dye and added to the culture media of HepG2 cells to determine their uptake. To investigate the potential effects of SW480-derived exosomes on gene expression in HepG2 cells, we performed a Toray 2-color mRNA microarray analysis. In addition, we assessed phospho-ERK1/2 protein expression in HepG2 cells that were treated with exosomes by western blotting. To determine whether the activation of the classical MAP kinase pathway by SW480-derived exosomes altered cell migration, we used a wound-healing assay, in which SW480-derived exosomes were added to the culture media in the presence or absence of the MEK1/2 inhibitor U0126.

RESULTS

We demonstrated that SW480-derived exosomes were taken up by the recipient HepG2 cells via dynamin-dependent endocytosis and were localized to the HepG2 lysosomes. In addition, SW480-derived exosomes induced the phosphorylation of ERK1/2 following their uptake into HepG2 cells. Of note, these changes occurred during the early phase after exosome treatment. Furthermore, SW480-derived exosomes promoted the migration of recipient HepG2 cells in a wound-healing assay, which was suppressed by pretreatment with U0126, an upstream inhibitor of ERK1/2.

CONCLUSIONS

These results indicated that SW480-derived exosomes activated a classical mitogen-activated protein kinase pathway in recipient HepG2 cells via dynamin-dependent endocytosis and subsequently enhanced cell migration by ERK1/2 activation. Our results provide new insights into the regulation of cellular functions by exosomes.

ID: 14971 PIN: 151

EXOSOMES SECRETED FROM HUMAN COLORECTAL CANCER CELL LINES CONTAIN MRNAS, MICRORNAS AND NATURAL ANTISENSE RNAS, THAT CAN TRANSFER INTO THE HUMAN HEPATOMA HEPG2 AND LUNG CANCER A549 CELL LINES

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BACKGROUND-AIM

Exosomes are microvesicles that are released from various cells into the extracellular space. It has been reported that the components within exosomes vary according to the type of secreted cell.

METHODS

In the present study, we investigated the tetraspanin family proteins CD63, CD9 and CD81 as useful collection markers of exosomes derived from the three colorectal cancer (CRC) cell lines HCT-15, SW480 and WiDr. In addition, we aimed to detect the mRNAs, microRNAs and natural antisense RNAs within the exosomes secreted from the three CRC cell lines. Furthermore, we examined whether exosomes containing their RNAs were transferred into the hepatoma cell line HepG2 and lung cancer cell line A549.

RESULTS

CD81 was detected in exosomes secreted from the three CRC cell lines. This result indicates that CD81 can be a collection marker of exosomes derived from the three CRC cell lines. When the RNA species within exosomes derived from the three CRC cell lines were examined, the mRNAs of housekeeping genes such as ACTB and GAPDH, the microRNAs such as miR-21, miR-192 and miR-221, and the natural antisense RNAs of LRRC24, MDM2 and CDKN1A genes, were detected. We discovered their natural antisense RNAs within exosomes for the first time in the present study. Furthermore, PKH67-labeled exosomes derived from the CRC cell lines were taken up into HepG2 and A549 cells. These findings indicate that the intracellular RNAs enclosed within exosomes are secreted to the outside, and exosomes derived from the CRC cell lines are transferred into HepG2 and A549 cells.

CONCLUSIONS

In conclusion, we reveal that exosomes derived from the CRC cell lines contain mRNAs, microRNAs and natural antisense RNAs, and can be delivered into HepG2 and A549 cells. These findings indicate that exosomal RNAs can shuttle between cells, and may be involved in the regulation of gene expression in recipient cells.

ID: 14974 PIN: 152

EXOSOMES RELEASED FROM PANCREATIC CANCER CELLS INDUCE ACTIVATION AND ANGIOGENIC ACTIVITIES IN ENDOTHELIAL CELLS

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BACKGROUND-AIM

Pancreatic cancer has the lowest rate of 5-year survival among all cancers. A number of extracellular factors are involved in the development and metastasis of pancreatic cancer to distant organs. Exosomes are lipid-bilayer membrane-enclosed nanoparticles, and have been recognized as important mediators of cell-to-cell communications. However, the role of exosomes released from pancreatic cancer cells in tumor-microenvironment remains unknown.

METHODS

In the present study, exosomes released from pancreatic cancer PK-45H cells were added to culture media in human umbilical vein endothelial cells (HUVECs). We investigated the mechanisms of uptake, gene expressions, activations of signal molecules and tube formation in HUVECs treated with exosomes released from PK-45H cells.

RESULTS

Here, we showed that exosomes released from PK-45H cells derived from liver metastasis activate various gene expressions in HUVECs. In addition, exosomes released from PK-45H cells promoted the phosphorylation of Akt and ERK1/2 signaling pathway molecules and the tube formation via dynamin-dependent endocytosis in HUVECs.

CONCLUSIONS

These results suggest that exosomes released from pancreatic cancer cells may enhance angiogenesis in a primary tumor and micrometastasis in distant organs, and be one of a novel angiogenesis promoter.

ID: 14975 PIN: 153

EXOSOMES RELEASED FROM PANCREATIC CELLS ARE HETEROGENEOUS PARTICLE POPULATIONS

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BACKGROUND-AIM

Exosomes are extracellular vesicles (EVs) released from cells, including microRNAs inside. However, little is known about homogeneity of inclusion components. In the present study, we assessed the homogeneity of exosomes by measurement of particles and microRNA copies released from pancreatic cells PK-45H.

METHODS

In order to confirm the size of exosomes released from pancreatic cancer PK-45H cells, those exosomal particles in culture supernatants were collected and examined using a NanoSight LM10. Microarray analysis was performed for identification of exosomal microRNAs. The numbers of microRNA copies per one cell were assessed by RT-qPCR.

RESULTS

The mean of particle size was 115 ± 9.1 nm. MiR-204-3p and miR-638 highly expressed into exosomes released from PK-45H cells. These microRNAs were detected 1~several copies per 10,000 particles. The copies of exosomal miR-638 in PK-45H cells decreased by treatment with 10 μM GW4869, neutral sphingomyelinase 2 (nSMase2) inhibitor.

CONCLUSIONS

These results suggest exosomes are heterogeneous particle populations and nSMase2 is involved in the secretion of exosomal miR-638.

ID: 14988 PIN: 154

EXPRESSION OF P53 MRNA SPLICE VARIANT BETA WITH P53 MUTATION CAUSES DOWN REGULATION OF CDKN2A, AND RELATES TO METASTASIS IN HUMAN COLORECTAL CANCER.

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BACKGROUND-AIM

The carcinogenesis of colon and rectum is caused by accumulation of genetic alternation or mutation, and it is reported that APC, p53, DCC and K-ras gene mutations or loss are significant predictive factors. In addition, it is also reported that the functional analysis of mRNAs and miRNAs are significance for clarification of cancer progress. However, complex analysis of gene mutation, splice variant and miRNA expression has not been reported. In this study, we examined the expression of p53 gene mutation, p53 mRNA splice variants, and cancer-related mRNA in human colorectal cancer. And we analyzed relationship between these factors, and evaluated significance as the clinico-pathological biomarker.

METHODS

Tumors were collected from 57 patients diagnosed with primary advanced colorectal cancer. Both genomic DNA and Total RNA were extracted with TRIzol reagent. p53 mutation was analyzed by direct sequence method. p53 mRNA splice variants were analyzed by RT-PCR, and cancer-related mRNA was analyzed by qRT-PCR. Statistical analysis was carried out by SPSS21.

RESULTS

Expression of p53 alfa was significantly associated with depth of cancer, and p53 beta expression was significantly associated with metastasis in p53 mutation type group. p53 beta expression - p53 mutation type group showed increase of p53 mRNA expression and decrease of CDKN2A expression. Meanwhile, there was no significant difference between expression of each p53 splice variant and each clinic-pathological factor in the p53 wild type group. However, p53 alfa or beta expression - p53 wild type group showed increase of HER2 mRNA expression and TOP2A expression.

CONCLUSIONS

Expression of p53 beta with p53 mutation is strongly related to metastasis, and it was suggested that colorectal cancer with expression of p53 beta and p53 mutation was poor prognosis.
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ID: 14997 PIN: 155

CTCF STABILIZED CHROMATIN LOOPING SURROUNDING MYELOPROLIFERATIVE NEOPLASM ASSOCIATED SNPS FACILITATES THE LONG RANGE INTERACTION OF REGULATORY ELEMENTS

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BACKGROUND-AIM

Myeloproliferative neoplasm (MPN) is a group of hematologic diseases including polycythemia vera (PV), essential thrombocythemia (ET) and primary myelofibrosis (PMF). PV and ET respectively manifest excess of red blood cells or platelets, PMF presents with myelopoiesis and bone-marrow fibrosis. The JAK2V617F mutation is believed to be a critical driver of excessive proliferation, while a few of PV cases (~5%) and about half of ET and PMF cases meet the WHO criteria for diagnosis of MPN but have no evidence of JAK2V617F mutant.
Lines of research suggested a specific haplotype around JAK2 (46/1 haplotype) present in the majority of MPN cases. Recently, genome-wide association studies (GWASs) demonstrated a group of SNPs are associated with MPNs, including two of them had already been recognized within 46/1 haplotype. It is a hint that there might be a parallel pathway contributed by MPN-associated SNPs abnormal activating or suppressing neighboring genes, resulting in disease development in the cases without JAK2V617F mutation. CTCF binding could help to establish chromating looping in facilitating the long range interaction of regulatory elements.

METHODS

A screening of JAK2 neighboring locus in TF-1, KU-812 and GM-12878 cell lines within a topological association domain (TAD) has performed to identify cis-regulatory elements. Chromatin landscape including DNase hypersensitive site, histone modification and transcription factors binding sites around JAK2 was observed by using UCSC genome browser. The physical interaction of cis-regulatory elements and neighboring genes around JAK2 are detected by chromosome conformation capture (3C) assay.

RESULTS

The hints from UCSC genome browser and 3D-SNP database provide robust correlations to molecular studies deciphering the regulatory mechanisms of long range chromatin. In blood cells (GM12878), there are about 9 genes within the TAD in which JAK2 located as reported. Genes without expression in blood tissue were excluded in the next experiment. The 3C assay provides that two MPN-associated SNPs locating in JAK2 intronic region identified by GWASs were found to have a physical interaction with INSL6 promoter. It may indicate that MPN-associated SNPs could act as a regulatory element of INSL6 and participated in excessive proliferation. The experimental evidence for interaction between INSL6 promoter and the designated SNP need to be pursued from the opposite direction anchoring on INSL6 promoter.

CONCLUSIONS

The interaction between INSL6 promoter and MPN-associated SNPs may provide a pathway parallel to that via JAK2V617F mutation as a causative mechanism of MPN. Yet, other haplotype may also contribute to the proliferation of affected cells. CTCF binding around the this locus may help to establish chromatin looping structure facilitating the long range interaction. Our study to decipher the chromatin interaction leading to MPN would supply a new target for new drug research and development.

ID: 15000 PIN: 156

COMPARISON THE RESULT OF HER-2/NEU AMPLIFICATION BY FISH, DISH AND IHC ASSAY IN TAIWANESE BREAST CANCER PATIENTS

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BACKGROUND-AIM

Many study showed amplification in Her-2/neu oncogene leading to poor prognosis in patients with breast cancers. Immunohistochemistry (IHC) and in situ hybridization (ISH) are the two main methods in clinical practice for assessing HER2 gene status. The aim of our study was to comparison the result of HER-2/neu amplification by FISH, DISH and IHC assay form breast cancer patients in our hospital.

METHODS

The tissue samples of 645 patients with invasive carcinoma of breast tested from Jan 2012 to Dec 2017. All specimens were detected HER-2/neu proteins expression by IHC stain that scored as 1+ and 2+ were analyzed by FISH or DISH assay for Her-2/neu oncogene amplification test and compared with results of IHC methods.

RESULTS

Of 645 breast cancer patients, 51 were negative for HER2 IHC (1+) and the others were equivocal (2+). 156 specimens (26.3%) showed Her-2/neu gene amplification and 2 specimens (0.34%) showed equivocal. About 7 cases (13.7%) of IHC(1+) breast tumors was HER-2 positive by DISH assay. Respectively, the positive percentage of HER-2 by DISH and FISH were 32.9% (53 /161) and 22.2% (96/ 433) in breast cancer patients with IHC 2+.

CONCLUSIONS

DISH method can be performed more rapidly than FISH which is technically demanding, expensive, requires fluorescence microscopy, and its fluorescence signal fades over time. We' re choose dual color silver-enhanced in situ hybridization (DISH) methods in our laboratory. Turn around time of the determining the Her-2/neu status in breast cancer with the DISH method allows the further progress of the disease to be predicted, the right treatment to be chosen and the response to the treatment to be foreseen.

ID: 15003 PIN: 157

CHARACTERISTICS OF BONE MARROW SUBPOPULATION IN A MOUSE MODEL UNDER HIGH DOSE RATE IONIZING RADIATION EXPOSURE

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BACKGROUND-AIM

Hematopoietic stem and progenitor cells (HSPCs) have the potential for self-renewal and differentiation, with higher proliferation for supplying functional mature blood cells, and are predominantly present in the bone marrow. HSPCs are extremely sensitive to extracellular oxidative stress, such as that inflicted by ionizing radiation (IR). This stress would be fatal because of the resulting hemocytopenia. In such situations, hematopoietic transplantation and/or cytokine administration are performed as emergency procedures. However, little is known about the details involved in the cellular behavior of HSPCs exposed to high dose of IR, particularly their differentiation potency and the degree of damage in the residual bone marrow cells. In this study, to clarify the behavior of residual HSPCs from high dose rate IR, cellular damage in bone marrow cells and its subpopulations were investigated using a mouse model.

METHODS

Eight-week old male C57BL/6N mice were exposed to whole-body X-ray irradiation (~7 Gy) at the rate of 1.0 Gy/min (0.5 mm Al + 0.3 mm Cu). After exposure, bone marrow cells were collected from both the femurs. The frequency of micronuclei (MN) was assessed and comet assay was performed in order to analyze the extent of intracellular damage. The bone marrow subpopulation was analyzed using direct immunofluorescence flow cytometry (FACS SORPTM; Becton Dickinson).

RESULTS

At 24 h and 72 h after 7 Gy-exposed bone marrow cells, a significantly lower nuclear division index and a higher MN frequency were observed in comparison to the non-irradiated control ($P < 0.01$). In addition, a significant decrease in the common lymphoid progenitor and common myeloid progenitor population was observed ($P < 0.05$: 72 h), although the multipotent progenitor (MPP) population was similar to the non-irradiated control after 72 h.

CONCLUSIONS

These results suggest that MPP is the most radioresistant population under a sublethal dose of IR in bone marrow cells.

ID: 15005 PIN: 158

ANTI-TUMOR AND ANTI-INVASION EFFECTS OF A COMBINATION OF 4-METHYLUMBELLIFERONE AND IONIZING RADIATION IN HUMAN FIBROSARCOMA CELLS

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BACKGROUND-AIM

Hyaluronan (HA) is a major component of the extracellular matrix that is synthesized in excess in cancer tissues. 4-methylumbelliferone (MU) inhibits the synthesis of HA and is closely related to the invasion and metastasis of cancer. However, the effects of MU in conjunction with cancer radiotherapy remain unknown. The present study assessed the anti-tumor and anti-invasion effects of the concomitant use of ionizing radiation (IR) and 100 ⌈M MU on human fibrosarcoma HT1080 cells.

METHODS

The viability of HT1080 cells was assessed using an annexin V and propidium iodide (PI) staining kit (BioLegend, Tokyo, Japan). The cell cycle distribution was analyzed by Hoechst 33342 staining. The fluoresecence analysis was performed using flocytometry (Cell Lab Quanta™ SC MPL (Beckman Coulter, Inc.). Invasion potential was evaluated using a BioCoat Matrigel invasion chamber (BD Biosciences). IR was performed using an X-ray generator (MBR-1520R-3; Hitachi Medical Co. Ltd.) with 0.5 mmAl and 0.3 mmCu filters (150 kV, 20 mA, 0.9 Gy/min).

RESULTS

There was a greater decrease in the viability of cells cultured with a combination of 2 Gy IR and MU compared with untreated control cells. In addition, cell cycle distribution analysis demonstrated that a higher proportion of these cells were in the sub-G1 phase and higher fractions of annexin-V positive, propidium iodide positive cells (i.e., apoptotic cells) were observed. HA concentration in the 2 Gy irradiated culture was similar to that in the non-irradiated control culture, however, it significantly decreased following the administration of both MU alone and 2 Gy IR with MU. Furthermore, treatment with 2 Gy IR and MU resulted in a significant decrease in the invasion rate and matrix metalloproteinase (MMP)-2 and MPP-9 expression.

CONCLUSIONS

These results suggest that the administration of MU with 2 Gy IR is effective at reducing HA production, cell invasion and the metastatic potential of cancer cells.

ID: 15023 PIN: 159

THE FREQUENCY OF EGFR MUTATION TYPES AND T790M IN TAIWANESE PATIENTS WITH NON-SMALL CELL LUNG CANCER: A SINGLE CENTER STUDY

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BACKGROUND-AIM

Lung cancer causes the highest mortality rate in both genders in Taiwan. Besides the chemotherapy, patients with non-small cell lung cancer (NSCLC) could benefit from alternative targeted therapy with tyrosine kinase inhibitors (TKIs). However, the therapeutic response to TKIs is highly related to the presence of epidermal growth factor receptor (EGFR) mutation and its mutation types. Thus, the result of EGFR mutation test may help physicians achieve better treatment outcome in NSCLC. In this study, we investigated the EGFR mutation rate and the frequency of EGFR mutation types in Taiwanese patients with NSCLC.

METHODS

A total of 1421 formalin-fixed-paraffin-embedded specimens (742 men and 679 women) of lung adenocarcinoma tissue were collected from a single center, Kaohsiung Veterans General Hospital, Taiwan. All samples were examined for EGFR mutations in exon 18, 19, 20 and 21 by Real-Time PCR (Roche Z480) or direct sequencing method. Mutations were categorized as positive or negative and assessed using Chi-square test for proportions across genders.

RESULTS

The median age of all patients was 66 years; 69 years for male and 64 years for female ($P<0.001$). The overall EGFR mutation rate was 55.1%, while the mutation rate in females (66.4%, 451/679) was significantly higher than that in males (44.7%, 332/742) ($P<0.001$). Among the EGFR mutant cases, the majority of mutation types were exon 21 mutation (55.2%) and exon 19 deletion (41.6%). The mutation rate of exon 18 and 20 were 2.9% and 7.4%, respectively. The TKI resistence mutation, T790M, was observed in 20 cases and 18 of those were without treatment of TKIs. There are 37 patients with complex mutation types and 51.4% of those harbored T790M mutation. Our data revealed that Taiwanese patients with NSCLC and those in other Asia countries had significantly higher EGFR mutation rate, comparing with the data in western countries.

CONCLUSIONS

Our data revealed that patients with NSCLC in Taiwan had significantly higher EGFR mutation rate and the most predominant type was exon 21 mutation. The median age of female patients with NSCLS is younger than that of male and EGFR mutations occurred more frequently in female than in male patients and the result was consistent with previous published data.

ID: 15052 PIN: 16

COMPARISON OF 2 DECALCIFICATION METHODS INFLUENCE ON IMMUNOHISTOCHEMICAL ANALYSIS

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BACKGROUND-AIM

This project aimed at testing several immunohistochemical analysis commonly used on bone marrow biopsies (CD34, CD117, CD61, Glycophorin A, MPO, CD3, CD20, CD19, CD5, CD23, Ki67,PAX5, TDT, CD138, Kappa and Lambda), by simultaneously staining a section decalcified by formic acid, and a section decalcified by MolDecal.

METHODS

15 bone marrow biopsies were decalcified in MolDecal for 5 hours in a KOS microwave at 50°C and 15 bone marrow biopsies with a similar diagnosis were decalcified in formic acid for 7 hours at room temperature. All stains were done on Dako Link 48.
Assesment according to NordiQC.org: Optimal staining: 3, Good staining: 2, Borderline staining: 1 and Poor staining: 0.

RESULTS

CD34 and CD 117 showed more tissue decalcified in formic acid to get a score 3, and if tissue with score 2 is added all tissue decalcified in formic acid are acceptable for diagnostic use. The same analysis decalcified in MolDecal show a wider spread over the scoring system with 3,08% scoring 1 and 7,49% scoring 0.
When we add score 2 and 3 for CD20, CD19, PAX5, TDT and CD138 it shows more tissue decalcified in formic acid as acceptable for diagnostic use than sections decalcified in MolDecal with a rather large difference.
For Glycophorin A, CD5 and MPO the highest score is for tissue decalcified in formic acid, but when we add score 2 and 3 both methods are equally acceptable.
CD61 and Lambda has most score 3 in tissue decalcified with formic acid, but when we add score 2 and 3 MolDecal has most tissue acceptable for diagnostic use.
CD3 shows the opposite results with most tissue decalcified in MolDecal scoring 3, but when we add score 2 and 3 most tissue decalcified in formic acid are acceptable for diagnostic use.
For Ki67 and Kappa the difference between the two methods was too small to matter.
In CD23 the acceptable score for both methods was very low and over 50% could not be scored on account of too few positive or reliably positive cells, even though more tissue decalcified in formic acid is acceptable for diagnostic use.
Overall most tissue decalcified with formic acid scores 2 or 3, whereas tissue decalcified with MolDecal shows more tissue with scores of 0 or 1.

CONCLUSIONS

Based on this project we cannot recommend decalcification in a microwave with MolDecal at 50°C for 5 hours.

ID: 15043 PIN: 160

POSITIVE CONTROLS FOR HIGH-RISK HUMAN PAPILLOMA VIRUS

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BACKGROUND-AIM

The standard method of detecting high-risk human papillomavirus(HR-HPV) in tissue at the Department of Surgical Pathology, Zealand University Hospital is based on in situ hybridization(ISH) reaction. As quality control a HR-HPV-positive tissue is used. However the positive tissue is rare and difficult to obtain. At the same time the department performs routine testing for HR-HPV in liquid-based cervical cytology material(SurePath) using a DNA PCR-based method on the Cobas 4800 platform. This study will determine whether HR-HPV-positive cells from cervix cytology recidual material converted to an artificial clot are suitable as positive control for the tissue ISH HR-HPV method.

METHODS

Ten artificial clots were made from a pool of SurePath cervical cytology residual material. Each clot contained material from three or six HR-HPV-positive patients. The clots were fixated in 4%formaldehyde for 24 hours and processed in a tissue processor. After paraffin embedding the blocks were serially cut in 3⌈m sections and HR-HPV ISH was performed using a Novocastra HR-HPV probe on the Bond Leca Max platform. Positive tissue control material was put on each slide for the HR-HPV ISH reaction. A neighbour section was incubated with DNA Negative Control probe from Novocastra as negative control. The number of cells in the clots were estimated as well as the number of HR-HPV-positive cells, the intensity of the brown nuclear staining and the DNA Negative Control staining.

RESULTS

In the ten blocks the cells were few and scattered within a background of debris. The signal for HR-HPV was weak. In six blocks few to moderate cells were infected, all with low intensity of the brown nuclear staining. In the remaining four blocks few cells were infected and the brown intensity was very low. For three blocks there was no signal with the Dna Negative Control reaction whereas there was a weak reaction in the other seven blocks. All findings were independent of the number of patients material used.

CONCLUSIONS

It is possible to make an artificial clot with well-preserved morphology. However the weakness of the HR-HPV reaction in few cells together with the positive reaction for the DNA Negative Control makes it less useful as a positive control for the HR-HPV. Therefore further optimization is needed.

ID: 15057 PIN: 161

WHOLE EXOME SEQUENCING ANALYZING A CASE OF UNUSUAL BLOOD FEATURE

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BACKGROUND-AIM

The mutations of exons attribute to more than 85% genetic diseases in human. The etiology and diagnosis of complicated and rare diseases could be found out and elucidated by whole exome sequencing (WES). In this case, the diagnosis of congenital dyserythropoietic anemia(CDA) II was made of a patient with unusual RBC morphology.

METHODS

A 40 y/o female with the diagnosis of thalassemia major and primary throbocythemia had received splenectomy and platelet inhibitors. In 2016, she visited OPD where macrocytic anemia (Hb: 8.3 g/dL; MCV: 104.9fL) and thrombocytosis (PLT: 3260 x 103/㎕) were found. The blood smear showed significant anisocytosis and poikilocytosis and almost abnormal appearance of erythrocyte in peripheral blood smear. Tracing back to the patient's laboratory test results since 2009, anemia and thrombocytosis were noted. In September of 2016, platelet numbers were overestimated due to fragmented RBC and microcyte (including microspherocyte). After correction, the number of platelet was 383 x 103 /ul. The Hb analysis showed there was 3.9% HbH. The RBC morphology between the patient and the other patient with HbH and splenectomy were different significantly. Combined with other hematological diseases, like HS, HS or G6PD deficiency was suspected initially, but the morphology of peripheral blood smear was not compatible. Thus genetic analysis by WES was suggested.

RESULTS

Four variants are found by WES. Among these variants, the base, chr20:g.18523799 within SEC23B, is changed from C to T. This mutation has been proved relevant to CDA II. The other 3 variants, within UGT1A1, SLCO1B1 and CHF, do not have something to do with RBC disorders. The gene product of SEC23B is an important component of COPII which is responsible for protein transportation in the cells. SEC23B mutation in patients with CDAII could lead to defects of COPII, which could result in instability of RBC membrane because of abnormal band 3 glycosylation due to failure of transportation of band 3 to Golgi apparatus.

CONCLUSIONS

In this case report, the diagnosis of RBC membrane instability due to CDA II with HbH is proved by WES. This answers the patient's unusual RBC morphology. It is a reasonable approach method by WES to deal with difficult clinical issues.

ID: 15091 PIN: 162

SPLICE DONOR REGION WITH INTRONIC C.5999-277G>A MUTATION OF FVIII GENE FOR MILD HEMOPHILIA A PATIENTS IN TAIWAN

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BACKGROUND-AIM

Identifying genetic mutations in hemophiliacs is important for disease evaluation and genetic consultation. In 10-18% of mild type Hemophilia A (HA) patients, mutations cannot be found by routine exonic DNA analysis. We aimed to identify the genetic defects by mRNA analysis of FVIII gene in mild HA patients without mutation in exonic DNA.

METHODS

From 2006 to 2016, we identified FVIII exon mutations in 39 of 48 mild HA patients from 34 unrelated families using routine genetic testing. We then evaluated the 9 remaining mild HA patients from 5 unrelated families without exon DNA mutation by performing cDNA sequence analysis. Total cellular RNA was reverse-transcribed to cDNA, which was then amplified as eight fragments using nested PCR. Their median age was 16.5 years old, ranging from 8 to 78 years. The average FVIII:C level was 12.3%, ranging from 6.5% to 28.9%.

RESULTS

Eight patients from 4 unrelated families were confirmed to have the same position of FVIII gene mutation. Their cDNA fragment of exon 18-19 region was notably found to have presence of an aberrant 675 bp fragment. Sequencing of this fragment showed that there were two separate alternative splicing new exons of 35 bp and 55 bp within intron 18, which formed a 90-bp insertion between exon 18 and exon 19 (E18ins90bpE19) in mRNA. This alternative splicing transcript possibly resulted from deep intronic variant of c.5999-277G>A of intron 18. The 8 patients were proved to be from 4 unrelated families by X chromosome haplotype analysis. Another one patient was found to have skipped exon 19 and the last one could not be found any variation.

CONCLUSIONS

Our study demonstrates that by mRNA analysis, the mutation detection rate for mild HA was increased from 82.9% (29/35) to 97.1% (34/35) of unrelated families and suggests that deep intronic variant of c.5999-277G>A in splice donor region of new alternative splicing exon may be a hot-spot mutation for these patients.

ID: 15093 PIN: 163

DIAGNOSTIC SIGNIFICANCE OF SALIVARY TRANSCRIPTOMIC BIOMARKERS AGAINST THE STANDARD GLYCEMIC PARAMETERS IN THE CLINICAL DIAGNOSIS AND MANAGEMENT OF PRE-DETERMINED FILIPINO TYPE 2 DIABETES MELLITUS (T2DM) PATIENTS

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BACKGROUND-AIM

International Diabetes Federation published prevalence estimates in 2014 and presented that there are 3.2 million cases of T2DM in the Philippines with a 5.9% prevalence rate in adults between the ages of 20 and 79 years old. If this is left untreated, it can cause the blood glucose levels to stay high permanently, high level of glucose in blood is routinely measured through fasting blood sugar and glycosylated hemoglobin. These routine methods require invasive collection of blood. Thus, a valid and noninvasive method for the detection of T2DM must be developed. In this study, the researchers explored the possibility of using saliva as a sample in the clinical diagnosis of Filipino T2DM patients using the Salivary Transcriptomic Biomarkers (STB). This study investigated the presence and gene expression of four pre-identified STB namely Kirsten rat sarcoma (KRAS), Spermidine N(1)-acetyltransferas (SAT1), Proteosome subunit beta type-2 (PSMB2), and Epidermal growth factor receptor (EGFR) based on the study of Lee et al in various conditions related with T2DM. Two categories were studied, one is based on the known duration of T2DM and the other according to the management of T2DM.

METHODS

Gene expression was measured through relative quantification by analyzing the change in gene expression of the 4 STB in the saliva sample with reference to the salivary internal reference genes namely Glyceraldehyde-3-phosphate dehydrogenase (GAPDH), Beta-actin (ACTB) and Ribosomal Protein S9 (RPS9), which are normally present in diseased and healthy state using nested RT-qPCR. Participants of the study were case-matched.

RESULTS

Results showed that unmanaged T2DM had increased risk of more than 4-fold upregulation of KRAS and SAT1 and 4-fold downregulation of EGFR and PSMB2. While results of unmanaged T2DM patients had increased risk of more than 2-fold upregulation of KRAS and SAT1 and downregulation of EGFR and PSMB2. Likewise, patients with more than 10 years of T2DM had increased risk of more than 4-fold upregulation of KRAS and SAT1 and 4-fold downregulation of EGFR and PSMB2.

CONCLUSIONS

Measurement of gene expression utilizing RT-qPCR involving the STB is of diagnostic potential in assessing diabetes management among Filipino T2DM patients.

ID: 15118 PIN: 164

CHARACTERIZING SOLUBLE E-CADHERIN AND HER2 MOLECULES IN THE CONTEXT OF METASTATIC GASTRIC CANCER SURVIVAL

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BACKGROUND-AIM

CDH1 gene, coding for the E-cadherin (E-cad) protein, and epidermal growth factor receptor 2 (HER2) are linked to gastric cancer (GC). The extracellular domain (ECD) of both the anchored proteins can be cleaved by metalloproteinases leading to an increase of serum E-cad (sEcad) and HER2 (sHER2) levels. sE-cad binding HER2 activates HER2 downstream signaling. HER2+ metastatic GC (mGC) can be used as trastuzumab+chemo targeted therapy. However, the survival benefit is limited to a fraction of these pts and the factors affecting trastuzumab efficacy are still unknown. We evaluated the association of CDH1 haplotype, sE-cad and sHER2 levels with pts survival to determine the prognostic value of these parameters in mGC

METHODS

59 mGC patients (44 males, ±60 years) were tested for germline CDH1 haplotype, including the promoter region, by Sanger sequencing. The allele and genotype frequencies and the haplotype were compared between HER2+ and HER2- mGC (chi-squared test, VassarStats, SNPator, Arlequin softwares). Survival analysis was performed at the time of the first treatment by Cox regression analysis. sE-cad and sHER2 levels were measured at diagnosis by ELISA (Invitrogen). E-cad and HER2 status was assessed by ICH (clone 36 and clone 4B5, Ventana). The cutoff value for the level of sE-cad and sHER2 was set at 1.99 ⌈g/ml and 15 ng/ml, respectively. Patients agreed to participate to the study and provided informed consent (CRO-2011-2012 Code EUDRACT: 2011-001720-37).

RESULTS

An association between the HP7 CDH1-haplotype and a subset of HER2+ mGC with better prognosis was observed. sE-cad level was found to increase with pts age, the presence of -285A polymorphism and a better OS. sHER2 level correlated with the HER2 expression evaluated by ICH and CDH1-haplotype

CONCLUSIONS

CDH1 haplotypes may be useful to predict the OS of mGC. HP7 CDH1-haplotype showed an association with a better response to regimens based on trastuzumab. Results whether confirmed in additional series could be useful as a surrogate to screen mGC pts who will have a real chance of benefiting from treatments based on trastuzumab. The critical role of the interaction between sE-cad and HER2 receptor signaling in response to trastuzumab+chemotherapy is intriguing and require deeper studies.

ID: 15150 PIN: 165

SEARCHING FOR THE NORTHERN LIGHT; (--)NOR AND (⟨⟨) AURORA BOREALIS; TWO NOVEL DELETIONS CAUSING ALPHA-THALASSEMIA FOUND IN NORWEGIAN PATIENTS.

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BACKGROUND-AIM

Alpha-thalassemia is one of the most common monogenic diseases worldwide and is caused by reduced or absent synthesis of alpha-globin chains, most commonly due to deletions of one or more of the alpha-globin genes. Sequence variants that alter gene expression or deletions involving upstream regulatory elements are less frequent. Alpha-thalassemia occurs with high frequency in tropical and subtropical regions of the world. For people of Northern European origin, inherited hemoglobin disorders, such as alpha-thalassemia, are extremely rare. Here, we describe two novel deletions causing alpha-thalassemia found in patients of Norwegian origin.

METHODS

The study patients were diagnosed during routine hemoglobinopathy evaluation carried out at the Department of Medical Biochemistry, Oslo University Hospital, Norway. The patients were selected for their thalassemic phenotype, despite Norway as country of origin. All samples went through standard hemoglobinopathy evaluation. Quantitative real-time PCR copy number variation (CNV) analysis was applied to detect uncommon deletions in the alpha-globin gene cluster. Deletion breakpoints were characterized using gap-PCR and DNA sequencing.

RESULTS

Two novel deletions, (--)NOR and (⟨⟨)Aurora Borealis, were identified in altogether nine patients from two and one families, respectively, all of Norwegian origin presenting with microcytosis. The (--)NOR deletion was a result of homologous recombination deleting both alpha-globin genes. The (⟨⟨)Aurora Borealis deletion caused alpha-thalassemia by affecting the upstream regulatory element, HS-40, leaving the alpha-globin genes intact.

CONCLUSIONS

Even though inherited hemoglobin disorders are extremely rare in indigenous Northern Europeans, the possibility of a carrier state should not be ignored.

ID: 15179 PIN: 166

THE DIAGNOSTIC SIGNIFICANCE OF SERUM MIRNAS AGAINST THE CLASSICAL GERM CELL TUMOR MARKERS (CGCTMS) IN THE EVALUATION OF THE CLINICAL MANAGEMENT OF TESTICULAR GERM CELL TUMORS AND ACUTE LEUKEMIA AMONG FILIPINO PEDIATRIC PATIENTS IN A TERTIARY HOSPITAL

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BACKGROUND-AIM

Cancer is a massive health problem in the world today due to its pathophysiology of genetic damage and suppression of anti-tumor immunity. Thus, the accurate and speedy diagnosis of cancer is a major key in solving the rapid growth of childhood cancers. Classical germ cell tumor markers (CGCTMs) are utilized to initially diagnose testicular germ cell tumors (TGCT) but only 60% of the patients with TGCT have elevations of the CGCTMs, thus, proposes the need for new biomarkers. Diagnostic significance of serum miRNAs against the CGCTMs among pediatric testicular germ cell tumor patients and acute leukemia patients was the central focus assessed by the study.

METHODS

Done in a tertiary hospital, serum of patients were gathered and serum biomarkers, AFP, ®-hCG, LDH, were evaluated in contrast to miRNAs, miR-371a-3p, miR-223 and miR-128b, also present in the same serum of the said patients. Two phases were involved in the study: samples obtained from patients with established diagnosis of involved diseases (pre-intervention phase) and the samples obtained from the same patients after they have been subjected to appropriate intervention (post-intervention phase). Systematic random sampling was utilized in the study wherein the respondents were composed of patients diagnosed with pediatric acute leukemia and pediatric testicular germ cell cancer whose samples were collected immediately after chemotherapy or surgery. Case control design was applied to determine relevant distinction in expression that exists in diseases of interest compared to the control group.

RESULTS

Results showed that 80% among all Filipino pediatric patients have expressed at least a 2-fold increase in serum miRNA-371a-3p upon diagnosis of TGCTs, and have showed a great downregulation of the said gene and presented to be of 98% more sensitive than CGCTMs post-intervention. On the other hand, 78% among all Filipino pediatric patients have expressed at least a 2-fold increase in serum miRNA-223 upon AML diagnosis, and have demonstrated significant downregulation of serum miRNA-128, and vice versa.

CONCLUSIONS

Thus, relative quantification of the serum miRNA expression levels using RT-qPCR represents a promising molecular diagnostic tool in assessing the clinical management phases among Filipino pediatric cancer patients.

ID: 15212 PIN: 167

ANALYSIS OF TRANSCRIPTIONAL ACTIVITIES OF ANGIOGENIC BIOMARKERS OF ENDOMETRIOSIS*

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BACKGROUND-AIM

Endometriosis is an estrogen dependent gynecology condition that is characterized by the implantation and successful adaptation of endometrial tissue in extra pelvic sites. Almost 7-10% of women in reproductive age are affected by this pathological condition that can complicate pregnancy and cause the infertility. A novel research data consider a combination of pro/angiogenic factors that play an important role in angiogenesis during endometriosis development. So far, there is no reliable marker for detection and progress monitoring of endometriosis from patient serum, and therefore the use of molecular methods appears to be one of the possible and prospective options.

METHODS

Detection of expression changes of mRNA levels of specific pro/anti angiogenic factors in the blood of patients with different stages of endometriosis compared to the control group. Correlation of obtained results with demographic and clinical characteristics. The experimental group (n = 10), consisted of patients suffering from frozen pelvis (FP), endometriosis of sacrouterine ligamentumes (ESUL) and peritoneal endometriosis (PE). Expression of individual genes was detected by qRT-PCR and the results were compared with the control group (n = 10).

RESULTS

The mRNA level for sEng was about 273% higher in patients with FP and about 126% higher in patients with PE than in controls. We also detected a significant increase of mRNA levels of Flt-1 gene in patients with different types of endometriosis in compare with control group. Expression of Plgf-1 gene was decreased by 46% in patients with PE and by 79% decreased in patients with ESUL.

CONCLUSIONS

Expression profiling of specific markers for detection of different types of endometriosis is therefore a highly current topic and can assist in the development of both new diagnostic and therapeutic applications in the treatment of patients with endometriosis.
This work was supported by the VEGA 1/0873/16 grant project.

ID: 15213 PIN: 168

EXPRESSION CHANGES OF GLI2 AND MITF ASSOCIATE WITH MALIGNANT MELANOMA PROGRESSION*

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BACKGROUND-AIM

Malignant melanoma represents approximately 4% of human skin cancers, yet accounts for approximately 80% of deaths from cutaneous neoplasms. An increased GLI2 expression was associated with loss of E-cadherin protein expression, what lead to the induction of melanocyte proliferation. Other possible biomarker of melanoma progression is a specific transcription factor MITF, which regulates differentiation, proliferation and survival of melanocytes. Detection of expression changes of gene GLI2 and MITF from the whole blood of patients with different stages of malignant melanoma, on transcription levels (mRNA) in comparing with healthy controls.

METHODS

In cooperation with Department of Plastic, Reconstructive and Aesthetic Surgery were collected blood samples from histologically confirmed patients with different stages of MM (n = 60). Patients were sorted into three groups according grades of disease into: grade 1 (n=20), grade 2 (n=15), grade 3 (n=25) and grade 4 (n=10). Control group consist from 10 healthy people. After routine biochemical analysis the total RNA was isolated from peripheral blood, then only mRNA molecules were transcribed into cDNA with following real time PCR amplification using specific primers for GLI2 and MITF in comparing of Gapdh and Hgprt.

RESULTS

Our results showed increasing tendency in mRNA levels for GLI2. Considering results of individual patients, we found negative relationship between increased expression of GLI2 and decreased expression of MITF. Fluctuating levels of MITF mRNA found in our melanoma samples, are rather due to micro environmental cues, critical epigenetic states and modifications of upstream signalling pathways.

CONCLUSIONS

Our results showed that expression levels of GLI2 significantly correlates with the grade of malignant melanoma. In combination with results of less specific marker MITF was proved that molecular changes on mRNA levels can serve as a useful biomarker for detection of rising melanoma or for monitoring of melanoma progression.
The work was supported by VEGA 1/0372/17

ID: 15322 PIN: 169

CORRELATIONS BETWEEN HISTOLOGICAL AND ARRAY COMPARATIVE GENOMIC HYBRIDIZATION CHARACTERIZATIONS OF WILMS TUMOR

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BACKGROUND-AIM

Wilms tumor, or nephroblastoma, is the most common pediatric renal malignancy. Its diagnosis is principally based on histology. Several genetic loci have been shown to be associated with Wilms tumor formation, including WT1, WT2, FWT1, FWT2, CTNNB1, WTX, and TP53. Other loci, such as 1p, 2q, 7p, 9q, 12q, 14q, 16q, 17p, and 22, have also been implicated in the etiology of Wilms tumor. The aim of this study is to elucidate the molecular pathogenesis of this tumor.

METHODS

In the present study, we analyzed the histological appearance and copy number aberrations using array comparative genomic hybridization of six Wilms tumors without somatic mutation in the WT1 gene.

RESULTS

Amplifications of BMP4 at 14q22.2 and NR2F2 and MIR1469 at 15q26.2 were observed in all six Wilms tumors. Amplifications of ZIC2 at 13q32.3 and HNF1B at 17q12 were identified in the Wilms tumors of epithelial type and amplifications of MEG3 at 14q32.2 and SOST at 17q21.31 were identified in the Wilms tumors of stromal type.

CONCLUSIONS

Our results indicated that amplifications of BMP4, NR2F2 and MIR1469 may be the essential events in the tumorigenesis of Wilms tumor. In addition, epithelial Wilms tumor may be specifically associated with amplifications of ZIC2 at 13q32.3 and HNF1B at 17q12 and stromal Wilms tumor may be specifically associated with amplifications of MEG3 at 14q32.2 and SOST at 17q21.31. Mixed type Wilms tumor may be the heterogenous group that can be classified using these genetic results.

ID: 15070 PIN: 17

THE INFLUENCE OF FIXATION TIME IN FORMALDEHYDE AND PROCESSING PLATFORM ON MORPHOLOGY, IMMUNOHISTOCHEMISTRY AND DNA QUALITY

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BACKGROUND-AIM

Using pathology guidelines the recommended fixation time in 4% neutrally buffered formaldehyde (NBF) for almost all tissue is a minimum of 24 hours. In our department we have a minimum fixation time of 4 hours for biopsies less than 2 mm on one side. In a previous project "The influence of different fixatives and preparation methods on morphology, immunohistochemistry and molecular analyses", we found that the processing platform has an influence on DNA quality, especially the rapid processing platform Tissue Tek® Xpress®. The aim was to test the influence of a shorter fixation time on morphology, immunohistochemistry and DNA quality.

METHODS

Samples: normal large intestine cut into small biopsies measuring approx. 2x2x4 mm. Fixation: 4, 6 and approx. 27 (24-30) hours in 4% neutrally buffered formaldehyde. Processing: one biopsy from each fixation time were processed on both Tissue Tek® VIP® 5 and Tissue Tek® Xpress®. Morphology: HE stain. Histochemistry: Alcian PikroSirius (APS). Immunohistochemistry: CD117, Ki67, Actin SMM-1, CK20 and PMS2. DNA quantity and quality: fragment analysis and RealTime PCR.

RESULTS

Morphology was not influenced by fixation time or processing platform, and presented uniform in appearance. Histochemical staining with APS was marginally better processed on VIP, whereas processing on Xpress seems to prefer a long fixation time. This is probably due to the koagulative nature of the solutions on the Xpress and maybe to some extent the use of microwaves. Ki67, CD117 and PMS2 were not influenced by fixation time or processing platform, CK20 seems to favor Xpress processing, and Actin SMM1 seems to favor VIP processing, both with no influenced of fixation time.
Processing on Xpress gives less DNA and shorter fragments for all fixation times compared to processing on VIP. The poor DNA quality using Xpress may be explained by a combination of microwaves and solutions.

CONCLUSIONS

In this limited study we found that morphology, histochemistry, immunohistochemistry and DNA quality are highly dependent on processing platform, and not to the same extend on fixation time, all though there is a small tendency towards longer fragments of DNA with short fixation time. Overall, in this study VIP performed superior compared to Xpress for nearly all analysis.

ID: 15336 PIN: 170

A CASE OF HISTIOCYTIC NEOPLASM IN BONE MARROW

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BACKGROUND-AIM

-Introducation-

Dendritic and histiocytic cell neoplasms are rare malignancies that make up less than 1% of all neoplasms arising in lymph nodes or soft tissues. Langerhans cell histiocytosis (LCH), histiocytic sarcoma (HS), and interdigitating dendritic cell sarcoma (IDCS) are conventionally considered to be derived from bone marrow precursors. Morphology and immunohistochemistry evaluation by a hematologist remains key for differentiating between these neoplasms. Recently, we experienced a case that was diagnosed as a histiocytic neoplasm in bone marrow. We will present a morphological with hematology features, and immunohistochemistry.

METHODS

-Patient-

A 40-year-old Japanese men who presented with ischemic lumbago. MRI and PET/CT Showed multiple bone lesions and diffuse infiltrate tumor in bone marrow.

RESULTS

- Hematology examination -

Blood examination showed WBC 23.0×103/㎕,Hb 9.2g/dL,PLT 250×103/㎕,TP 4.9g/dL,ALB 3.0g/dL,LDH 96 U/L,CRP 0.20 mg/dL,IgG 509 mg/dL,IgA 78 mg/dL,IgM 135 mg/dL. Imprint smear of bone marrow examination showed atypical cells composed of a lot of phagocytosis. It was difficult to diagnose only hematologic smear.

CONCLUSIONS

-Sammary of histopathology -

Microscopically, tumor cells were highly cellular, plasmacytoid, non-cohesive proliferation of round, oval or polygonal cells. Phagocytic activity was found. Immunohistochemically, CD68,CD45,KPI, etc (+). CD4,CD8,CD10,Kappa, Lambda, CD34, Lyzozyme, S100, etc (-).Histiocytic neoplasm is suspected. Differential diagnosis is Erdheim-Cheter disease, and histiocytic sarcoma, we performed BRAF V600E immunohistchemical staining and Sanger sequencing. The result was positive for immunohistchemical staining, and negative for sequencing. In consideration of all findings, the final pathological diagnosis was histiocytic neoplasm.

-Discussion-This case, it was difficult to confirm diagnosis only hematologic smear. We share the morphological features of the rare cases, and change information. In addition, there are a lot of mast cells in the second hematology smear. It may occur because of the allergy by the treatment.

ID: 15352 PIN: 171

IONIZING RADIATION EFFECTS IN A RETINOBLASTOMA AND AN ESOPHAGEAL CANCER CELL LINES

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BACKGROUND-AIM

Esophageal cancer (EC) is the 8th most frequently diagnosed cancer worldwide. Retinoblastoma (RB) is the most common intraocular cancer in childhood. Radiotherapy (RT) is currently used in both types of cancer as treatment of. The study has assessed the effects of ionizing radiation (IR) on cell lines of EC (OE19) and of RB (Y79 GPF-luc), in terms of cell survival, cell viability, cell proliferation, alterations on cell cycle and types of cell death induced.

METHODS

Cell lines were exposed to single-shot doses of IR from 0.5Gy to 12.0Gy, except control cells (0.0 Gy). Clonogenic assay allows the aggression model determination after exposure to IR and to calculate half lethal dose (DL_{50}). Cell viability and proliferation were assessed by trypan blue exclusion assay. The proliferation index determination was performed by Ki-67 expression. Flow cytometry was used to assess cell death type and cell cycle.

RESULTS

Our results showed that increased IR doses induced cytotoxic and antiproliferative effects, in a dose-dependent manner for OE19 cells and dose and time-dependent manner for Y79 cells. In both cell lines were observed a decrease in viability and proliferation. In OE19 for 12Gy (60.25±2.32%) while in Y79 (47.5±2,3, $p<0.001$. A decrease of Ki-67 expression was observed in both cell lines, 73.8% and 14.6%, respectively. In OE19 cells the main types of death observed were apoptosis, mainly for 2Gy (20.0±1.3%, $p=0.003$) and necrosis at 12Gy (16.7±1.3%, $p=0.037$), while in Y79 cells was later apoptosis/necrosis at 12Gy (14.3±1.3%, $p<0.001$). It was also observed cell cycle arrest on G2/M phase (41.5±2.1%, $p=0.000$) and (86.6±2.8%, $p=0.004$), respectively. Cell survival curves were established according to the quadratic linear model for both cell lines, denoting a decrease in the survival factor for both lines with increasing IR doses. For OE19 cell line the DL_{50} was 2.47Gy and for Y79 GPF-luc cell line was 1.21Gy.

CONCLUSIONS

IR decreases cell proliferation, viability and survival in a dose-dependent way for both cell lines, as well as an arrest in G2/M phase, accompanied by an increase of initial apoptosis and necrosis for OE19 and later apoptosis/necrosis for Y79 cells. Y79 is more radiossensible than OE19 cell line. eutic approach.

ID: 15356 PIN: 172

CLINICAL FEATURES AND OUTCOME OF 6 NEW PATIENTS CARRYING DE NOVO KCNB1 GENE MUTATIONS

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BACKGROUND-AIM

KCNB1 gene, encodes the pore forming and voltage-sensing ® subunit of the voltage gated potassium (K+) channel sub family 2 (Kv2.1) that plays essential roles in regulating neuronal excitability, contributing to action potential repolarization and dynamic modulation of neuronal activity. De novo heterozygous mutations of KCNB1 have been reported in 14 patients with neurodevelopmental disorders.
We describe electroclinical features and outcome of six novel patients carrying de novo missense and nonsense KCNB1 mutations.

METHODS

In our patients, we performed clinical, EEG, neuropsychological and brain MRI data analysis. Targeted resequencing of a panel including 95 genes associated with epilepsy was performed in all six patients.

RESULTS

Mean age at seizure onset was 11 months. Mean follow-up of 11.3 years documented that 4 patients, following an infantile phase of frequent seizures became seizure-free; mean age at seizure offset was 4.25 years. Epilepsy phenotypes comprised West syndrome in two patients, infantile-onset unspecified generalized epilepsy, myoclonic and photosensitive eyelid myoclonia epilepsy resembling Jeavons syndrome, Lennox-Gastaut syndrome and focal epilepsy with prolonged occipital or clonic seizures in each and every one. Five patients had developmental delay prior to seizure onset evolving into severe intellectual disability with absent speech and autistic traits in one, stereotypic hand movements with impulse control disorder in another. The patient with Jeavons syndrome evolved into moderate intellectual disability. Mutations were de novo, 4 missense and 2 nonsense, 5 were novel, and one resulted from somatic mosaicism.

CONCLUSIONS

KCNB1 related-manifestations include a spectrum of infantile onset generalized or focal seizures whose combination leads to EIEE including West, Lennox-Gastaut and Jeavons syndromes. Long term follow-up highlights that, following a stormy phase, seizures subside or cease and treatment may be eased or withdrawn. Cognitive and motor functions are almost always delayed prior to seizures onset and evolve into severe, persistent impairment. Thus, KCNB1 mutations are associated with diffuse brain dysfunction combining seizures, motor and cognitive impairment.

ID: 15359 PIN: 173

HPV GENOTYPING OF HPV PRIMARY SCREENING-POSITIVE SAMPLES IN ÖREBRO, SWEDEN

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BACKGROUND-AIM

Cervical cancer is caused by human papillomavirus (HPV). There are many different HPV types whereof some are associated with genital infections, with high risk genotypes (hrHPV) being associated with precancerous lesions and cancer. In Sweden, new recommendations for cervical cancer screening has been in place from 2016, where women between 3O and 69 should be screened using HPV test and a high risk positive result followed by a cytology evaluation. In the Örebro region, an mRNA- based test is used for HPV primary screening where 14 hrHPV are detected (HPV-16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 66 och 68). The test can be either positive or negative, without providing information on what actual genotype is present. The aim of the study was to investigate what HPV genotypes is present in screening-positive samples in the female screening population in Örebro, Sweden.

METHODS

mRNA HPV screening- positive samples (Aptima, Hologic) between November 2016 and April 2017 (n=530) were included in the study. Two hundred µl of residual material from analyzed Aptima sample tubes was extracted for DNA (DNA Minikit, Qiagen) and further genotyped using Anyplex II HPV28 (Seegene), detecting 28 different HPV genotypes.

RESULTS

Most women in this screening study were between 30 and 39 years (n=274, 52%), while 32% between 40 and 49 (n=173) and 16% between 50 and 58 (n=83). Despite of a positive screening result, 46 samples tested negative in the genotyping analysis (9%). The most common genotypes present were HPV31 (n=93), HPV16 (n=76), HPV52 (n=57) and HPV68 (n=49) and of 28 detectable genotypes, 27 was present in at least one sample. Single infections (n=281) were more common than multiple infections (n=203) and the distribution was similar between the three age groups (Fisher´s Exact Test, p=0.867).

CONCLUSIONS

In this study, a wide repertoire of HPV genotypes was present without differences between age groups. Also, a distinctive portion of mRNA positive samples were found to be negative when DNA tested. Negative samples will be further evaluated with a second HPV test, using different viral target genes.

ID: 15360 PIN: 174

CLINICAL FEATURES OF 6 NEW PATIENTS CARRYING PIGA GENE MUTATIONS

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BACKGROUND-AIM

Mutations in PIGA, a gene involved in the biosynthesis of the glycosyl phosphatidyl inositol (GPI) anchor, have been identified in patients with a wide spectrum of phenotypes including paroxysmal nocturnal hemoglobinuria, multiple congenital anomalies, intellectual disability, dysmorphic features and epilepsy.
We describe the clinical features of 6 male patients (2 siblings) with epilepsy harboring 5 missense mutations in PIGA.

METHODS

In all six patients, we performed targeted resequencing of a panel including 95 genes associated with epilepsy. Segregation analysis of available family members was performed using Sanger sequencing. X-chromosome inactivation analysis was performed on DNA isolated from peripheral lymphocytes of female carriers (4 mothers and 1 grandmother) after amplification of the androgen receptor (AR) locus and of the connector enhancer of KSR 2 (CNKSR2).

RESULTS

We identified 5 missense mutations in the PIGA gene, 1 de novo mutation and 4 inherited mutations from unaffected mothers. All variants were not reported in public available databases (gnomAd, Exome Aggregation Consortium and 1000genomes), and 3 were novel. X-chromosome inactivation analysis resulted to be random with the exception of one family in which the proband's mother and grandmother resulted to have skewed X-inactivation.

CONCLUSIONS

Sixteen mutations in the PIGA gene have been identified, so far. In our study, we identified 3 additional new mutations. The phenotypic consequences of PIGA mutations can be classified into 2 sub-types: a severe phenotype characterized by myoclonus and asymmetrical suppression bursts on EEG, multiple anomalies with dysmorphic features, and delayed myelination and a less severe phenotype characterized by intellectual disability and treatable seizures without facial dysmorphisms or congenital anomalies. Patients described here presented myoclonic seizures (2/6), multifocal seizures (3/6), generalized seizures (1/6), thin corpus callosum (2/6) and psychomotor delay (4/6). This study increases the number of patients with PIGA mutations, contributing to better define the clinical spectrum of these patients.

ID: 15363 PIN: 175

NEXT GENERATION SEQUENCING APPROACH FOR THE DIAGNOSIS AND THE DEFINITION OF BRAIN MALFORMATIONS

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BACKGROUND-AIM

Brain malformations represent a major cause of developmental disabilities, severe epilepsy, and reproductive disadvantage. Because of substantial genotypic and phenotypic heterogeneity for these malformations, a comprehensive analysis of clinical, imaging, and genetic data is needed to properly define these disorders.
We performed a NGS approach of targeted resequencing in patients with brain malformations and an accurate genotype-phenotype correlation to better define the associated phenotypic spectrum.

METHODS

We analyzed a cohort of 337 singletons with brain malformations with a panel targeting 86 genes for brain malformation. Target enrichment and sequencing was performed with a custom Nextera Rapid Capture design on Illumina MiSeq/NextSeq platforms.

RESULTS

We identified 64 patients carrying pathogenic variants in 31 genes (including mosaic mutations and genomic rearrangements), corresponding to a molecular yield of 19% (64/337). The most mutated gene resulted LIS1 (9), followed by TUBA1A (7), DYNC1H1 (5), CASK (4), WDR62 (4) and ASPM (3). 32 mutations were identified in 25 additional genes, most of them recently associated with brain malformations.
We sub-classified the patients into 3 main groups:
Group 1- Neuronal migration disorders (195)
Group 2- Pontocerebellar hypoplasia (42)
Group 3- Microcephaly (102)
The mutation rates observed in each groups were: 23% for Group 1, 26% for Group 2 and 10% for Group 3.

CONCLUSIONS

Our extensive study on a large cohort of patients having brain malformations confirms the role of major genes, such as LIS1 or TUBA1A for lissencephalies. However, the high genetic heterogeneity of these disorders is highlighted by the identification of single/few mutations in a wide number of genes recently or rarely associated with brain malformations. In a diagnostic setting, gene panels permit to obtain a good sequence coverage of each gene with affordable costs and limited time, thus representing a first-line diagnostic option in all cases without a clear differential diagnosis, to facilitate personal medical care and reduce the number of patients to enroll for whole exome sequencing. In addition, this approach has the invaluable advantage to expand the known genotype-phenotype correlation.

ID: 15374 PIN: 176

HYPER-METABOLIC CIRCULATING TUMOR CELLS PREDICT PROGRESSION OF DISEASE IN METASTATIC BREAST CANCER: RESULTS FROM A PILOT CLINICAL STUDY.

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BACKGROUND-AIM

the number of circulating tumor cells (CTC) in blood is correlated with the progression of metastatic cancer and may serve as a tool for therapy monitoring and recurrence detection. A hallmark of cancer is an altered glucose metabolism, which leads to the acidification of the tumour microenvironment. Our aim was to evaluate a method for detection of CTC with an altered metabolism, which is determined by the increased extracellular acidification rate (ECAR), in patients with metastatic breast cancer (MBC).

METHODS

CTC were enumerated in peripheral blood samples from 18 MBC with CellSearch system and the metabolic assay, before and 3-4 weeks after the start of a new line of therapy. For the metabolic assay, blood samples were enriched for CTC by immunomagnetic depletion of CD45+ cells and stained for CD45. With a microfluidic system, single-cells were emulsified in droplets containing a pH-sensitive fluorescent dye. After incubation at 37°C for 30min, droplets were reinjected for optical pH reading. Events with pH<6.9 and CD45(-) cells were considered as CTC-positive events.

RESULTS

With the metabolism assay, the patient cohort presented positive events at an average rate of 659 ± 2313/7.5mL of blood (median 16, range 0-9875) at baseline, and 85 ± 153/7.5mL (median 12, range 0-470) at follow-up. Corresponding events in healthy donor samples (N=10) were in average 2±2/7.5mL (median 0, range 0-7). Patients were dichotomized for high or low presence of CTC based on a threshold of 50 cells/7.5mL. A total of 6 patients presented high count, while 12 were classified as low count. Survival curves differed significantly between the two groups ($p<0.02$ in Log-rank test), with median PFS respectively of 131 vs 248 days. Hazard ratio was 6.7 in the high count group. Finally, data points were well correlated with CellSearch ($R2=0.97$).

CONCLUSIONS

This study shows the preliminary results of a pilot clinical trial aimed at assessing the clinical meaning of metabolically-active CTC in MBC patients. These results suggest that CTC with an altered metabolism are a promising indicator of progression of disease, based on PFS data. Good correlation with the CellSearch strengthen this hypothesis. However, a larger clinical trial is requested to validate these results.

ID: 15389 PIN: 177

MIR-21 AND MIR-155 IN TUMOR-DERIVED EXOSOME AS A NOVEL DIAGNOSTIC BIOMARKER FOR ORAL SQUAMOUS CELL CARCINOMAS.

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BACKGROUND-AIM

Oral cancers account for over 7,000 cases of cancer per year in Taiwan. Although better combinations of multidiscipline approach have improved the quality of life in oral cancer patients, the overall 5-year survival rate remains 50% without much improvement over the past decades. Recent studies have demonstrated that microRNAs in tumor-derived exosomes are stably detectable and can serve as useful biomarkers for cancer. This study was proposed to analyze the exosomal miRNAs released from the oral cancer cells to find their potential for early diagnosis of oral cancer.

METHODS

We have isolate exosomes from primary epithelial cell culture of both neoplastic and keratinized gingival tissue of 3 oral cancer patients. We examined the expression of exosomal miRNAs using microarray. In addition, we have collected serum from 53 oral cancer patients and 13 healthy donors to validate these miRNAs by real-time quantitative PCR. miR-21 and miR-155 were the most markedly increased in OSCC patients. Therefore, miR-21 and miR-155 were selected as a candidate for further functional analysis.

RESULTS

In microarray study for the exosomal miRNA expression, there were 52 miRNAs downregulated or up-regulated in the exosomes of the cancer cells as compared with those of the keratinized gingival tissue. The exosomes of the oral cancer cells had significantly higher expression of miR-21 and miR-155. miR-21 repressed tumor suppressor PTEN and miR-155 down-regulated Bcl-6 expression. The SCC4-derived exosome-shuttling miR-21 or miR-155 can be transferred to promote cell proliferation and cell invasion. Exosomal miR-21 and miR-155 yielded an ROC curve area of 0.896, with 89.2% sensitivity and 81.1% specificity for distinguishing OSCC patients from healthy controls. Exosomal miR-21 and miR-155 were significantly correlated with the TNM stage (r= 0.952; P=0.011).

CONCLUSIONS

As a novel mechanism of cell-cell communication, the effective delivery of exosome-shuttling miR-21 or miR-155 in tumor microenvironment may affect the status of oral cancer cells consequently to promote the recurrence and distant metastasis of oral cancer, which suggests that exosome-shuttling miRNA could be potential biomarkers for diagnosis and prognostic evaluation in oral cancer.

ID: 15390 PIN: 178

IONIZING RADIATION EFFECTS IN A BLADDER CANCER AND IN AN OSTEOSARCOMA CELL LINE

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BACKGROUND-AIM

Bladder cancer (BC) is the second most common malignancy of the genitourinary tract, being the ninth most frequently diagnosed cancer worldwide. Osteosarcoma (OS) is the most malignant tumor of the bone of children and young adults, being the second cause of cancer-related death in pediatric age. To improve survival of the patients with this diagnosis, recommendations include surgery with radiotherapy and/or chemotherapy.
The aim of our work is to determine and characterize the effects of ionizing radiation (IR) in a BC (HT1376) and an OS (MNNG/HOS) cell line, namely studying cell survival, proliferation and viability, as well as cell cycle and types of cell death induced, after exposure to IR.

METHODS

HT1376 and MNNG/HOS cells were exposed to X-Rays doses from 0.5 to 12.0 Gy. Cell viability and proliferation were assessed by Trypan Blue and Ki-67 expression. Flow cytometry was used to evaluate cell cycle and cell death. Cellular morphology was evaluated with May-Grünwald Giemsa and clonogenic assay was used to assess cell survival and to calculate the half lethal dose (LD_{50}).

RESULTS

After exposure to IR, we observed a cytotoxic and an antiproliferative effect in both cell lines, in a dose and time-dependent way for HT1376 cells and in a dose-dependent way for MNNG/HOS cells. LD_{50} was calculated using linear quadratic model. HT1376 cells present a higher radioresistance (3.09 Gy) than MNNG/HOS cells that show an LD_{50} of 2.42 Gy. The higher doses of IR caused a decrease of Ki-67 expression and a cell cycle arrest in G_2/M phase for both cell lines. The predominant type of cell death observed was necrosis for HT1376 cells and apoptosis for MNNG/HOS cells.

CONCLUSIONS

Radiotherapy has an anti-tumor effect in different malignancies by inhibiting tumor cell growth, promoting cell death and inducing cell cycle arrest. Our results suggest that IR aggression induced a cytotoxic and antiproliferative effect, a cell cycle arrest and cell death in both cell lines. Cell cycle arrest in G_2/M phase can be related to the attempt of the cell to repair damages caused by IR, like DNA double-strand breaks. When repair mechanisms fail, cell death happens.

ID: 14841 PIN: 179

EVALUATION OF THE METHOD FOR MEASURING ICG USING AN AUTOMATED BIOCHEMICAL ANALYZER

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BACKGROUND-AIM

The indocyanine green (ICG) retention rate is important for assessing the severity of liver disorders. In the conventional method, blood needs to be collected twice. In the present study, we evaluated the usefulness of the autoanalyzer methods for ICG plasma disappearance rate (ICG-PDR) in routine clinical laboratory testing.

METHODS

In the automated ICG method 1, serum collected after an intravenous ICG injection was mixed with saline reagent containing a surfactant, and the ICG concentration was measured at a dominant wavelength of 805 nm and complementary wavelength of 884 nm (Ann Clin Biochem 2017). In the automated ICG method 2 (ICG decolorization method), after the absorbance of an ICG-loaded sample was measured, a sodium periodate solution (final concentration: 0.75%) was added, and the absorbance was measured for use as a blank. For the autoanalyzer method, an automatic biochemical analyzer (JCA-BM 2250 JOEL) was used.

RESULTS

The CVs of the within- and between-run reproducibilities of method 1 and method 2 were 2% or lower, and dilution linearity passing the origin was noted up to 10 mg/L ICG, respectively. The linear correlation equations (unit, mg/dL) between the standard procedure (x) and method 1 (y'), and method 2(y'') methods were y'=1.050x+0.029, and y''=1.047x+0.009, respectively. Divergence in turbid samples have corresponded to false negativity with the standard procedure.

CONCLUSIONS

The automated ICG method 1 and 2 may be highly practical because blood sampling before ICG loading is unnecessary and measurements are simple.

ID: 15102 PIN: 18

INTERPROFESSIONAL CORPORATION, IN THE PRE-ANALYTICAL PHASE

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BACKGROUND-AIM

Sensitive and specific analysis in the laboratory are important to ensure the patient a fast and correct diagnosis. A reliable result depends on the methods and the material at hand. In this study, we focused on the handling of a tissue sample from operation room to analysis in the pathology laboratory. Tissue will start to degenerate soon after removal from the body, and the fixation is used to stop these reactions and to stabilize the tissue.
The aim of this study was to explore and identify any problem areas in the pre-analytical phase of the tissue sample.

METHODS

To identify the working routines and explore potential problems, a descriptive method using a validated questionnaire for operating nurses, with 14 questions and biomedical laboratory scientists (BLS) with 19 questions, were distributed among departments in Denmark.

RESULTS

The questionnaire response rate for nurses and BLS were 66% and 69% respectively.
Ninety % of the participants identified it as a problem if the pre-analytical phase in the operating room was insufficient. 60 % experienced that molecular biology analysis were not performed every 6 months or more often. Feedback on samples, are sent to the requesting doctor.
Thirty-three % of the participating nurses have not received education on how to handle tissue samples to the pathology department. Regarding the cold ischemia time, 28% answered 0-30 minutes and 67% 30-60 minutes. When asked about feedback on tissue sample handling, 72% answered that they never received information in the operating team.

CONCLUSIONS

We have identified problems with insufficient fixation of tissue in the pre-analytical phase. Almost all BLSs had experienced the problem but we cannot conclude where in the process the problem lays. That the cold ischemia time in 67% of the cases were 30-60 minutes, may be a practical problem that can be solved by enhancing the interprofessional corporation. In connection to this 33 % of the participating nurses, answered they had not had education on how to handle tissue samples. Initiating communication between the operating team of nurses and doctors, and the biomedical laboratory scientist (BLS), may shorten this time before fixation and identify other problems regarding the procedure.

ID: 14865 PIN: 180

HEAVY METALS, TUMOUR NECROSIS FACTOR ALPHA AND OXIDATIVE DNA DAMAGE IN CHRONIC EXPOSURE TO CEMENT DUST.

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BACKGROUND-AIM

Inflammatory cell activation, oxidative stress and oxidative DNA damage have been associated with exposure to cement dust; heavy metals present in cement dust have been implicated. This study evaluates the biomarkers of oxidative stress and inflammation and heavy metals in relation to duration of exposure to cement dust among cement workers.

METHODS

Ninety consenting apparently healthy male subjects aged 18-60 years comprising of 45 cement workers and 45 non-cement workers were studied. The tumor necrosis factor alpha (TNF-ⴝ) and urinary 8-hydroxy-2-deoxyguanosine (8-OHdG) were estimated by ELISA methods, biomarkers of oxidative stress (malondialdehyde (MDA), glutathione (GSH), nitric oxide (NO), total antioxidant capacity (TAC), total plasma peroxides (TPP)), and uric acid (UA) were determined using colorimetric methods, heavy metals (Arsenic (As), Chromium (Cr), Cadmium (Cd)) were determined by atomic absorption spectrophotometry while oxidative stress index (OSI) was obtained by calculation. Anthropometric indices, blood pressure and socio-demographic information were obtained using standard methods. Data were analysed using t-test, ANOVA, LSD post hoc and Pearson's correlation at $p < 0.05$.

RESULTS

The diastolic blood pressure, MDA, TPP, OSI, TNF-ⴝ, As and Cr levels were significantly higher and UA, TAC and GSH lower in cement workers compared to non-cement workers ($p<0.05$). Higher levels of Cd, MDA, 8-OHdG and TNF-ⴝ and lower levels of GSH were observed with increasing duration of exposure to cement dust ($p<0.05$). Positive correlation was observed between 8-OHdG and TNF-ⴝ ($r = 0.492$, $p = 0.001$) and negative correlation between GSH and MDA ($r = -0.463$, $p = 0.001$) only in cement workers.

CONCLUSIONS

Chronic exposure to cement dust is associated with depletion of antioxidants, increased lipid peroxidation, oxidative stress, inflammation and oxidative DNA damage which may be implicated in the development of chronic lung conditions.

ID: 14791 PIN: 181

IMPROVE THE DETECTION RATE OF TRICHOMONAS VAGINALIS IN AUTOMATED URINE SEDIMENT ANALYZER

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BACKGROUND-AIM

Trichomonas vaginalis(TV) is the most prevalent nonviral sexually transmitted infection in women. Over 80% of TV infections are asymptomatic but still contagious. Direct microscopy of urine sediment is the traditional lab technique to identify TV. However, the increase uses of automated urine sediment analyzer(AUSA) instead of direct microscopy in recent years leading TV positive rate significantly dropped one-sixth to the original numbers. The outcome shows the inability of modern AUSA to differentiate TV from other urine sediments.

METHODS

From 2009 to 2013, 1,013,786(included 610 TV(+) samples) retrospective data for urine routine and sediment examination were collected at clinical lab, Chang Gung Memorial Hospital. All chemical parameters from urine dipstick and conventional microscopic examination were calculated AUC by SPSS to determine the cutoff value for TV(+).

RESULTS

We analyzed 10 chemical parameters from urine dipstick and 3 parameters from sediments and found that Leukocyte esterase(LEU), Epithelial cells(EC) and White blood cells(WBC) play the crucial roles in TV identification(AUC under ROC curve ranged from 0.747 to 0.830, $p<0.001$). When the individual criteria was set for EC (male>10/㎕; female>15/㎕), WBC(male>15/㎕; female>40/㎕) or LEU(≥1+), the specificity for TV can reach to 80.4%~97.6%. If combined all three criteria, the sensitivity for TV can go up to 91.6% in women and 64.9% in men.

CONCLUSIONS

Automatic urine sediment analyzer is the powerful tool to assist medical technologists(MTs) to differentiate the morphology of urine sediments, but TV can easily be overlooked. We have established three parameters' criteria (EC, WBC and LEU) to remind MTs to recheck the results from analyzers, and thus to improve the detection rate in TV examination.
We had analyzed a large amount of retrospective data and discovered TV(+) pattern in urine examination. These criteria can be very helpful to assist MTs to examine TV in urine routine testing without any additional cost.

ID: 14820 PIN: 182

INVESTIGATION OF VITAMIN B12 AND FOLATE STATUS AT A TERTIARY HEALTH CENTRE IN SOUTH AFRICA

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BACKGROUND-AIM

The most common reasons for assessing vitamin B12 and folate status are the clinical suspicion of deficiency along with the haematological abnormality of macrocytic anaemia. However, there is often a lack of a precise clinical or haematological picture to guide the appropriate investigation of these patients. Normal haemoglobin or mean cell volumes are often found, masking the need for appropriate investigation. In this descriptive study we look at clinician testing patterns for vitamin B12 and folate testing and whether patient haematological findings of macrocytosis and/or anaemia prompted clinician investigation of vitamin B12 and folate deficiencies.

METHODS

This was a retrospective descriptive analysis of data obtained from the laboratory information system for a six month period at a tertiary academic hospital. Adult patients with macrocytosis, anaemia or both were selected and laboratory records reviewed to determine whether they were potentially investigated for vitamin B12 and folate deficiency.

RESULTS

Only 16.2% of patients with macrocytic anaemia, 7.8% of patients with isolated macrocytosis and 6.5% of patients with normocytic anaemia were tested for vitamin B12 and/or folate levels. No metabolite testing was requested.

CONCLUSIONS

In our setting, vitamin B12 and folate assessment is a diagnostic dilemma, delaying identification of potentially debilitating disease. Clinicians need to be informed about earlier investigation and of the availability of metabolite screening and their use in establishing early deficiency.

ID: 14837 PIN: 183

DIAGNOSTIC MICROSCOPIC URINALYSIS

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BACKGROUND-AIM

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University of Rochester Medical Center, Strong Memorial Hospital Rochester, New York 1960-1980
Associate Professor
Educational Coordinator
Head of Laboratory Service
Monte Verde Productions, Inc., President Rochester, NY 1982-Present
Presenting Workshops, Seminars & Consulting
Nationally (ASCLS) (ASCP) & Internationally (IFBLS)
On Urinalysis & Related Renal Diseases

METHODS

When I first working at University of Rochester/Strong Memorial Hospital, Rochester, NY USA
there was NOT a Urinalysis Laboratory, the only ones doing UA were the interns. Being a Registered Medical Technologist at the time with a faculty appointment , I started the Urinalysis Laboratory and taught the 3rd Year Medical Students how to do a macroscopic and microscopic urinalysis.
Since it was difficult obtaining and preserving a urine sediment, I began taking micro photos of various cells, casts, crystals and organisms found in the urine. Along with the patients medical findings various case studies have been put together for presentations “around the world”.

RESULTS

Various presentations, seminars, workshops & posters were born 1982- Present
by Dyan Monte Verde, President of Monte Verde Productions Inc. Rochester, NY
Nationally ASCP & ASCP USA & Internationally IFBLS
”Diagnostic Microscopic Urinalysis”
”Arts of Urinalysis- Crystals & Calculi”
”Urinary Infections & Related Renal Diseases”
”Mini Case Studies in Urinalysis”
”The Use of Audiovisuals in the Teaching of Urinalysis”

CONCLUSIONS

DIAGNOSTIC MICROSCOPIC URINALYSIS
Dyan Monte Verde, MS, MLS (ASCP)
Using a case study approach, this presentation will focus on the overall importance of microscopic urinalysis. Atypical epithelia, cells, crystals and casts found in the urine will be shown utilizing various stains and polarization techniques. Microscopic examination of the urinary sediment has been described as a “Mini Biopsy” of the kidney. It provides a vital diagnostic tool for physicians and their patients to diagnose an asymptomatic patient and enables one to follow the progression of illness and recommend further treatment. Microscopic urinalysis plays a very important part in the clinical arena.
Media, Case Studies and CDs may be obtained at the meeting.

ID: 14838 PIN: 184

THE ARTS OF URINE ANALYSIS - CRYSTALS AND CALCULI ORAL PRESENTATION OR POSTER

D. Monte Verde [1]
[1]*University of Rochester / Strong Memorial Hospital Rochester, New York USA*

BACKGROUND-AIM

Dyan Monte Verde, MS, MLS (ASCP)
University of Rochester Medical Center, Strong Memorial Hospital Rochester, New York 1960-1980
Associate Professor Educational Coordinator Head of Laboratory Service
Monte Verde Productions, Inc., President Rochester, NY 1982-Present Presenting Workshops, Seminars, Media Nationally (ASCLS) (ASCP) & Internationally (IFBLS) On Urinalysis & Related Renal Diseases

METHODS

When I first working at University of Rochester/Strong Memorial Hospital, Rochester, NY USA
there was NOT a Urinalysis Laboratory, the only ones doing UA were the interns. Being a Registered Medical Technologist at the time with a faculty appointment , I started the Urinalysis Laboratory and taught the 3rd Year Medical Students how to do a macroscopic and microscopic urinalysis.
Since it was difficult obtaining and preserving a urine sediment, I began taking micro photos of various cells, casts, crystals and organisms found in the urine. Along with the patients medical findings various case studies have been put together for presentations “around the world”.

RESULTS

Various presentations, seminars, workshops, posters & media were born 1982
by Dyan Monte Verde, President of Monte Verde Productions Inc. Rochester, NY
”Diagnostic Microscopic Urinalysis” Workshop
”Arts of Urinalysis- Crystals & Calculi” Oral Presentation & Poster
”Urinary Infections & Related Renal Diseases” Oral Presentation
”Mini Case Studies in Urinalysis” Oral Presentation & Poster
”The Use of Audiovisuals in the Teaching of Urinalysis” Oral Presentation & Poster

CONCLUSIONS

THE ARTS OF URINALYSIS CRYSTALS & CACULI Dyan Monte Verde, MS, MLT(ASCP)
This presentation will provide an updated view of the “True Arts” of Urine Analysis. Many common crystals are readily recognized in urine sediment under light microscopy, but further differentiation may require more detailed examination using polarization techniques. If they are morphologically similar, their refractive properties can be of particular importance in their identification. Crystalline forms of many drugs, medications dyes appear in the urine and will be discussed. The participants will enjoy learning about other non-crystal “Art Forms” in urinalysis and understand their clinical significance.

ID: 14839 PIN: 185

MINI CASES IN MICROSCOPIC URINALYSIS

D. Monte Verde [1]
[1]*University of Rochester Medical Center/Strong Memorial Hospital Rochester, New York USA*

BACKGROUND-AIM

Dyan Monte Verde, MS, MLS (ASCP)
University of Rochester Medical Center, Strong Memorial Hospital Rochester, New York 1960-1980
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On Urinalysis & Related Renal Diseases

METHODS

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Since it was difficult obtaining and preserving a urine sediment, I began taking normal and abnormal microscopic photos of various cells, casts, crystals and organisms found in the urine. Along with the patients' medical findings and the dipstick results, various case studies have been put together for presentations "around the world".

RESULTS

Various presentations, seminars, workshops & posters 1982- Present
by Dyan Monte Verde, President of Monte Verde Productions Inc. Rochester, NY
Nationally ASCP & ASCP USA & Internationally IFBLS
"Diagnostic Microscopic Urinalysis" Oral Presentation & Workshop
"Arts of Urinalysis- Crystals & Calculi" Oral Presentation & Poster
"Mini Case Studies in Urinalysis" Oral Presentation & Poster
"Urinary Infections & Related Renal Diseases" Oral Presentation
"The Use of Audiovisuals in the Teaching of Urinalysis" Poster

CONCLUSIONS

MINI CASE IN MICROSCOPIC URINALYSIS Dyan Monte Verde, MS, MLS (ASCP)
Urinary sediment has been described as a "Mini Biopsy" of the kidney. It provides a vital diagnostic tool for physicians to diagnose an asymtomatic patient and enables one to follow the progression of illness and recommend further treatment. Using case studies, this presentation will focus on the over all importance of microscopic urinalysis. Atypical epithelia, cells, crystals and cast will be shown utilizing various stains and polarization techniques. Media may be purchased at the media.

ID: 14853 PIN: 186

ANALYSES OF RISK OF BLOOD CLOTHS FORMATION IN TYPE 2 DIABETES

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[1]*MNUMS*
[2]*School of Bio-Medicines, MNUMS*

BACKGROUND-AIM

Diabetes mellitus is one of the non-communicable chronic diseases leading in number of morbidity and mortality in worldwide. In the worldwide someone dies at every 6 seconds due to diabetes. In Mongolia, lifestyle changes due to sociology-economic switch in 90's, leads to increase prevalence of diabetes and becoming one of confronting problem in health system. Despite the prevalence of diabetes estimated 6.5% of population, the number of registered patients are about 11000, which is only 10% of estimated patients. Vascular complication of diabetes was revealed in 84.3% of patients with following high risk of blood thrombosis. Therefore, revealing the relationship between blood thrombosis and vascular disease are root of this study.

METHODS

This study has been conducted by analytic study method between study group and control group, patients with type 2 diabetes and metabolic syndrome, respectively. D-Dimer was analyzed by Sysmex CA560.

RESULTS

In the study group we selected 64 participants, 53.1% vs. 46.9%, male vs. female, respectively. In control group, we selected 41 participants, 39.0% and 61.0%, male vs. female. From basic thrombotic analysis, the thrombin duration has been prolonged, and D-Dimer was elevated in study group comparing to control. As a result of evaluating vascular disease degree in study group, 4.7% were mild, 76.7% were moderate and 18.7% were had severe complication of diabetic vascular diseases. There were no relationships between gender and clinical appearance of type 2 diabetes. However, there were statistically significant differences and linear correlations between study and control groups, in D-Dimer elevation and severity of vascular complications.The risk of formation of blood clot in patients with type 2 diabetes is more than 3.5 times comparing to patients with metabolic syndrome.The risk of blood clot formation in patients with moderate vascular complications was 3.1 fold higher comparing to control group. And in patients with severe vascular complications risk of blood clot formation were 5.1 times higher comparing control group.

CONCLUSIONS

The D-Dimer value of blood thrombosis may become one of clinical and laboratory indication to determine and evaluate vascular complications of type 2 diabetes.

ID: 14856 PIN: 187

THE IMPACT OF HEMOLYSIS ON COAGULATION PROFILE IN A BLOOD SAMPLE

L. Pan [1], C. Shin [1], C. Li [1]
[1]*Department of Laboratory Medicine, Chang Gung Memorial Hospital, Chiayi, and Chang Gung Medical Foundation, Taiwan*

BACKGROUND-AIM

This study aimed at investigating the impact of hemolysis in blood samples on coagulation profile.

METHODS

Between August 2009 and February 2010, 216 venous blood samples without notable hemolysis were collected from patients over the age of 18 at a tertiary referral center. After centrifugation, the plasma obtained was quantified for six coagulation parameters including prothrombin time (PT), activated partial thromboplastin time (APTT), fibrinogen (clotting method), D-dimer (immuno-turbidity approach),
protein C (colorimetric method), and anti-thrombin III (chromogenic method). The rest of the plasma from each blood sample was aliquoted into three tubes, each of which contained 1 mL of plasma with three different volumes of lysed RBCs (i.e., 2, 4, 8 ⌈L) to create hemolyzed blood samples with hemoglobin concentration of approximately 0.1, 0.2, and 0.4 g/dL, respectively, before repeating the coagulation tests for each hemolyzed sample to determine possible correlation between degree of hemolysis and change of a coagulation parameter.

RESULTS

The ranges of hemolysis-induced percentage deviation from normal values for all parameters were all within acceptable limits. APTT values tended to increase, whereas PT, fibrinogen, D-dimer, anti-thrombin III, and protein C tended to decrease with severity of hemolysis. Significant trends were noted between the degree of hemolysis and deviations from normal values for APTT ($p<0.005$), fibrinogen ($p=0.002$), D-dimer ($p=0.018$), anti-thrombin III ($p=0.039$), and protein C ($p=0.013$).

CONCLUSIONS

The results showed no remarkable impact of hemolysis on coagulation profile with plasma hemoglobin concentration up to 0.4 g/dL, highlighting the clinical reliability of coagulation parameters from hemolyzed blood samples.

ID: 14869 PIN: 188

SERUM MIR-375-3P INCREASE IN MICE EXPOSED TO A HIGH DOSE OF IONIZING RADIATION

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[2]*Department of Radiation Sciences, Graduate School of Health Sciences, Hirosaki University, 66−1, Hon-cho, Hirosaki, Aomori 036-8564, Japan*

BACKGROUND-AIM

Exposure to high-doses of ionizing radiation (IR) leads to development of a strong acute radiation syndrome (ARS) in mammals. ARS manifests after a latency period and it is important to develop fast prognostic biomarkers for its early detection and assessment. Analysis of chromosomal aberrations in peripheral blood lymphocytes is the gold standard of biological dosimetry, but it fails after high doses of IR. Therefore, it is important to establish novel biomarkers of exposure that are fast and reliable also in the high dose range. Here, we investigated the applicability of miRNA levels in mouse serum.

METHODS

C57BL/6NJcl (8 weeks old, male) mice were exposed to X-rays at a dose rate of 1.0 Gy/min (150 kVp, 20 mA, 0.5 mm aluminum and 0.3 mm copper filters). The irradiated and non-irradiated mice were sacrificed after 0 h, 24 h, 48 h, and 72 h for collection of blood and organ tissues. To identify increasing and/or decreasing miRNAs in sera of irradiated mice, we performed the Agilent mouse miRNA microarray assay and RT-qPCR. In order to identify the possible origin of the radiation-induced microRNAs in sera of mice, we analyzed the expressions of microRNAs by RT-qPCR in various cells and organs of the control animals. Double staining of TUNEL and immunohistochemistry of insulin in pancreas of control mice and at 72 h after 7 Gy X-irradiation.

RESULTS

We found significantly increased levels of miR-375-3p following whole body exposure to 7 Gy of X-rays. In addition, we analyzed their levels in various organs of control mice and found them to be especially abundant in the pancreas and the intestine. Following a dose of 7 Gy, extensive cell death occurred in these tissues and this correlated negatively with the levels of miR-375-3p in the organs.

CONCLUSIONS

We conclude that high expressing tissues of miR-375-3p may secrete this miRNA in serum following exposure to 7 Gy. Therefore, elevated miR-375-3p in serum may be a predictor of tissue damage induced by exposure to a high radiation dose.
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ID: 14878 PIN: 189

A RADIORESISTANT FRACTION OF ACUTE PROMYELOCYTIC LEUKEMIA CELLS EXHIBIT CD38 CELL-SURFACE ANTIGEN AND MRNA EXPRESSION

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[2]*Department of Bioscience and Laboratory Medicine, Hirosaki University Graduate School of Health Sciences, Hirosaki, Aomori, Japan*

BACKGROUND-AIM

Leukemic cells and normal hematopoietic tissues are generally more radiosensitive compared with other tissue types. However, ionizing radiation may induce the production of radioresistant cells, as radiation induces genetic mutation. The presence of radioresistant cells may result in a poor prognosis for radiation therapy. The properties of radioresistant human HL60 acute promyelocytic leukemia (APL) (Res-HL60) cells, a cell line established as an APL model, have been previously reported. It was observed that high-cluster of differentiation (CD)38-expressing cells were present among the Res-HL60 cells. However, to the best of our knowledge, the properties of the cell population exhibiting high CD38 expression have never been investigated. In the present study, the cell viability and the expression of CD38 mRNA were evaluated in Res-HL60 APL cells.

METHODS

The Res-HL60 cell line was previously established by subjecting wild type (Wt)-HL60 cells to 4 Gy X-irradiation/week for 4 weeks. Wt-HL60 and Res-HL60 cells were maintained in RPMI-1640 medium supplemented with 10% heat-inactivated FBS and 1% penicillin/streptomycin in a humidified atmosphere at 37˚C under 5% CO_2. Isolations of $CD38^+$ cells and $CD38^-$ cells and morphological analysis were performed using FACS SORP (BD biosciences). The expression of CD38, CD45 and C-EBPA mRNAs in each cells were analyzed by qRT-PCR.

RESULTS

Cell viability in Res-HL60 cells was higher compared with Wt-HL60 cells, but did not differ between high and mid/low CD38 antigen expression groups in Res-HL60 cells. A higher expression of CD38 mRNA in Res-HL60 cells was observed, particularly in the $CD38^{high}$ cell subpopulation. Furthermore, the expression of CD38 mRNA was upregulated following exposure to X-irradiation. In contrast, the characteristic expression of CD45 and C-EBPA mRNA were not altered.

CONCLUSIONS

These results suggest that the accumulation of CD38 protein in radioresistant APL cells, resulting from the constant expression of CD38 mRNA induced by X-irradiation, is a characteristic response of the radioresistant-surviving fraction; however, the accumulation of CD38 did not influence the extent of radioresistant behavior.

ID: 15103 PIN: 19

DAY-TO-DAY VARIATION IN IHC AND THE INFLUENCE OF FIXATION

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[1]*Department of Surgical Pathology, Zealand University Hospital, Roskilde.*

BACKGROUND-AIM

Pre-analytical circumstances are essential for optimal analytical results. In Immunohistochemical reactions (IHC), deviation in fixation standards may end in variable outcome, and in worst case unreliable analytical results. Intralaboratory reproducibility studies give valuable knowledge about the need to change laboratory standards. This study aimed to show the day-to-day variation in the outcome of the CD138-protocol, and how different fixation scenarios affected this. The scenarios were delayed fixation, and under-/over-fixation.

METHODS

Tissue samples of colon and tonsil from 3 patients, respectively, were collected and fixated in formaldehyde 4% aqueous solution with a delay of: 0 h, 1 h, 2 h, 4 h, 8 h, and 24 h. All pieces were kept in 0,9% saline at room temperature until fixation, and fixated for 24-48 h. Six of the pieces were fixated at a starting point of 0 h, and kept in formaldehyde for approximately 5 h, 24-28 h, 6 days, 2 weeks, and 3 weeks. After tissue preparation and paraffin embedding Tissue Microarrays (TMAs) were produced. The TMAs were sectioned and mounted on slides with the usual control section for CD138. The IHC reactions were performed over 10 different days, 2 times a day on the Dako Omnis platform from Agilent technologies using anti-CD138, clone B-A38 from Diaclone. The slides' morphology and the quality of the IHC reactions were evaluated by the author. They were additionally scanned on the Leica SCN400 slide scanner, and plasma cells in each slide were counted with the Tissue AI Software, both from Leica Biosystems. The reproducibility were quantified by Analysis of Variance (ANOVA) and boxplots.

RESULTS

As of February 2018, the IHC results from tonsils from 2 patients, and from colon from 1 patient were available. These results showed that the TMAs with delayed fixation had affected morphology and poor quality in plasma and epithelial cells at a delay of 8 h and longer. The TMA with under-/over-fixation of colon showed the same at a fixation time of 5 h.

CONCLUSIONS

It was expected that an impact on the quality could be seen at earlier stages of delay in fixation, but the fact that the specimens were kept in saline may have preserved the tissue. The results of the remaining TMA-slides, the counting of plasma cells, and the day-to-day variation will be ready during spring 2018.

ID: 14891 PIN: 190

ISSUES RELATED TO REPORTS OF ANTI-SS-A/RO ANTIBODY TITERS ASSOCIATED WITH CONGENITAL HEART BLOCK ONSET

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[1]*FUJITA clinic*
[2]*Osaka Women's and Children's Hospital*

BACKGROUND-AIM

An analysis of a multi-center joint study case database has shown that anti-SS-A/Ro antibodies titers being 32-fold according to double-immunodiffusion (DID) is a predictive factor for congenital heart block (CHB). We treated a case of suspected first degree CHB despite the anti-SS-A/Ro antibody titers being only 1-fold. We examined four anti-SS-A/Ro antibody positive cases including this one using other methods, and will hereby report on our findings.

METHODS

DID method: ENA-2 test (MBL, hereinafter, ENA-2). Enzyme immuno assay (EIA) method: STACIA MEBLux test SS-A (MBL, hereinafter, STACIA), MESACUP 52K SS-A/Ro (MBL, hereinafter, MESA 52K/Ro), MESACUP 60K SS-A/Ro (MBL, hereinafter, MESA 60K/Ro). Multiplex method: BioPlex ANA Screen (BIO-RAD, hereinafter, BioPlex). The subjects comprised four anti-SS-A antibody positive adult women (3 cases of Sjogren's syndrome and 1 case of rheumatic arthritis) that consulted the Fujita Clinic. Cases 1, 2 and 3 had Sjogren's syndrome, while case 4 had rheumatic arthritis. Of these, case 1 was suspected to have first degree CHB.

RESULTS

The results of DID performed previously at an external laboratory were as follows: Case 1: 1-fold (9 months prior), case 2: 1-fold (2 months prior), case 3: 8-fold (3 years prior), case 4: 16-fold (2 years prior). In terms of results for STACIA, cases 1, 2 and 3 exhibited ε1200U/ml and case 4 exhibited 1200U/ml. As such, all cases were strongly positive. The present results were as follows, displayed in order of ENA-2 (fold), STACIA (U/ml), MESA 52K/Ro (Index), MESA 60K/Ro (Index), BioPlex 52K SS-A/Ro (AI), BioPlex 60K SS-A/Ro (AI): Case 1: 64, ε1200, 117.4, 173.7, 6.2, ε8.0; Case 2: 8, ε1200, 131.4, 40.3, 7.2, ε8.0; Case 3: 32, ε1200, 165.1, 135.3, ε8.0, ε8.0; Case 4: 16, ε1200, 52.2, 12.8, 1.6, ε8.0. Thus, all cases were positive for high titers, while the DID titers increased in two or more tubes in all cases, with the exception of case 4.

CONCLUSIONS

DID is a visually-determined method that requires experience, and the results are susceptible to individual tester differences. As titers may be reported as lower than they actually are, caution is required when using this technique.

ID: 14892 PIN: 191

EFFICIENCY IMPROVEMENT OF BLOOD SUPPLY CHAIN AT A REGIONAL TEACHING HOSPITAL IN CENTRAL TAIWAN

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BACKGROUND-AIM

Blood service operations are a key component of the healthcare system all over the world. The blood supply chain comprises the processes of collecting, testing, processing, storage, release and/or distributing blood and blood products, starting with patients' needs and ending with transfusion of needed blood components to patients. The objective of the project is to improve the blood supply chain efficiency by introducing four indicators of improvement, "Returning rate of platelets", "Whole blood inventory ratio", "Fresh red blood cell supply ratio" and "Negative-antigen screening rate of special packed RBC".

METHODS

The annual blood transfusions were 16,000 patients and average annual blood usage was 40,000 units at case hospital. Based upon historical data analysis, following strategies were used to improve the blood supply efficiency: (1) To reduce the returning rate of platelets: adding platelet ordering checklist, adding platelet reservations system, and using co-management of platelet inventory in two hospitals. (2) To reduce the whole blood inventory ratio and the fresh red blood cell supply ratio: providing education and training on the clinical use of blood and blood products, and making appropriate use of blood and blood products. (3) To increase the negative-antigen screening rate of special packed RBC: enhancing the medical technologists to identify the antigen-negative packed red cells.

RESULTS

The case hospital employed a variety of improvement programs to improve blood supply management since 2016. The results showed that the returning rate of platelets was reduced to 0.5% (13 bags) from 2.9% (83 bags). The whole blood inventory ratio was reduced to 0.5% (80 bags) from1.2% (231 bags).simultaneously, the fresh red blood cells supply ratio decreased from 37.5% to 19.4%. Additionally, the use of whole blood increased from 40.4% to 50.3%. The purchase rate of negative-antigen screening rate of special packed RBC dropped from 13.5% to 3.91%.

CONCLUSIONS

In this study we describe the strategies and present results for a representative regional teaching hospital. The strategies can be used to improve the quality of blood transfusion services.

ID: 14899 PIN: 192

DEVELOPMENT OF POINT OF CARE TESTING FOR ALBUMIN TEST WITH WHOLE BLOOD SPECIMEN AND DATA CONVERSION ALGORITHM TO SERUM ALBUMIN ESTIMATED VALUE

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[2]*Hirosaki university hospital, Japan*
[3]*Hokkaido cancer center, Japan*

BACKGROUND-AIM

Albumin value is significant indicator of patient's long-term nutritional status. It is reported that nutritional management is strongly related to patient prognosis, recovery period and survival rate. Therefore, Nutrition Support Team (NST) activities become more important not only in hospital but also in home health nursing. Biochemical analysis with POCT in home health nursing is useful for understanding of patient nutritional status, but measuring principle of albumin value with whole blood specimen has not been developed. The aim of this work is development of POCT for albumin test with whole blood specimen and data conversion algorithm to estimation of serum albumin value from whole blood albumin value.

METHODS

1)System configuration: Albumin reagent for whole blood analysis was improved Bromcresol Green (BCG) method. We designed POCT device that was consisted of two photo-transistor units, LED units, and "NI-USB DAQ". We analyzed the data conversion algorithms from whole blood albumin value to serum albumin estimated value, and created application programs in "NI-LabVIEW".
2)Clinical trial: Peripheral blood was collected from thirty normal healthy persons. We draw fingertip blood with lancet, and collected into micro capillary. In addition, we also draw peripheral blood from brachial vein, and collected into blood collection tube. Serum was recovered after centrifuge. Albumin value was measured by both whole blood and serum specimen. We evaluated correlation and repeatability.

RESULTS

Our method showed good correlation between whole blood and serum. The correction with Hemoglobin level was effective for the albumin level data convert from whole blood to serum. Analytical repeatability showed C.V. 6.3%, and it was sufficient in clinical fields use.

CONCLUSIONS

Our system is possible to measure predictive ALB value with small amount of blood collection, and operability is simple and easy for home health nursing. Our POCT method with liquid reagent is low cost, it was suggested that this system is able to contribute to not only home health nursing but also medicine in developing countries.
ACKNOWLEDGMENT: This work was supported by SCOPE of the Japan Ministry of Internal Affairs and Communications.

ID: 14901 PIN: 193

QUALITY IMPROVEMENT OF GENERAL WORK FLOW BY REDUCING TURNAROUND TIME AND ERRORS DURING FROZEN SECTIONING OF MULTIPLE SUBMITTED SPECIMENS FROM OPERATING ROOMS

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BACKGROUND-AIM

Frozen sections are performed for tumor confirmation and to assess resectability and evaluation of marginal status during surgical resection.
In many occasions, unexpectedly intraoperative frozen consultations happen with multiple submitted specimens from single operation room. If multiple submitted specimens from different operation rooms are requested simultaneously, delaying time from reception to report of requested specimens is inevitable.
This study was designed for assessment of fundamental causes of delaying in frozen section pathology laboratory and improving them by evaluating turnaround time and causes of errors, and establishing information sharing system between operating room and the laboratory during a frozen sectioning.

METHODS

With work flow analysis in the frozen section pathology laboratory, we observed that ①excessive time spending during pre-embedding process, ②excessive time spending for frozen sectioning of multiple submitted specimens, ③high frequency errors during prescription ④problems of using thin transparent plastic containers, ⑤absence of communication systems for sharing information between operating room and frozen section laboratory.
In order to reduce TAT and errors during frozen sectioning, we modified our work flow in the frozen section pathology laboratory as follows: ①development of leveraging batch embedding-type mold, ②development of all in one mold technique for multiple submitting samples, ③introducing new-type plastic container for emergency specimens, ④establishing an information-sharing systems by development of software.

RESULTS

We improved the entire work-process by significantly reducing TAT up to 8 hours and 37 seconds per day by average. Surgeons and surgical teams in ORs are satisfied with improvement of reporting time and reduction of errors.

CONCLUSIONS

We improved our work quality by analyzing the fundamental causes of delaying during frozen sectioning with multiple submitting specimens from ORs, including BE, URO, ENT and DNT and modifying work-flow and development of several new techniques and systems.

ID: 14916 PIN: 194

HEVYLITE IGA: A BETTER ALTERNATIVE OVER TRADITIONAL ELECTROPHORESIS ASSAYS FOR DETECTING MONOCLONAL GAMMOPATHIES

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[3]*Serology , Laboratory Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung*

BACKGROUND-AIM

Protein electrophoresis (PEP) and immunofixation (IFE) are traditional laboratory blood tests for monoclonal gammopathies (MGs). Nevertheless, the identification of M-protein by PEP is time consuming and subjective. Although IFE may be considered a more sensitive assay for identifying the types of M-protein, it only provides qualitative results and cannot be used in monitoring patients with MGs. Hevylite® (HLC) assay is an alternative methodology, which enables the accurate measurement of each isotype-specific heavy and light chain, i.e. IgA and IgA.

METHODS

31 routine clinical samples including 23 follow up samples from patients with MGs(20 MM & 3 MGUS)and 8 control samples from patients without a MG, were analysed by CZE (Sebia, Capillary 2 system), IFE(Helena SPIFE 4000) and total IgA (Siemens, BN ProSpec) and retrospectively evaluated using IgA HLC(The Binding Site Group Ltd, UK) performed on the SPA PLUS(The Binding Site Group Ltd, UK).

RESULTS

Comparison of the summated concentrations of HLC IgA +IgA with total IgA showed very good correlation (y=0.9879x+0.5643; R2=0.9414). A similar trend was observed for the comparison between involved IgA HLC (iHLC) and M-protein concentration by CZE(y=1.5346x+0.8888; R2=0.9598). The relative agreement between HLC and IFE was 84% with only 5 discordant samples. Comparison of sensitivity for detection of an M protein in patients with a known MG showed that HLC had slightly lower sensitivity than IFE (83% vs. 87%) but superior sensitivity compared to CZE (83% vs.77%). In addition, 13 clinical samples were shown the detection of ® migration of M-proteins by CZE.

CONCLUSIONS

Our data indicated that HLC IgA assay is a more sensitive assay compared to electrophoresis. The HLC IgA assay can improve the detection and quantification of M-proteins, when M-proteins migrating in the ® region cannot be detected or accurately quantified using electrophoretic techniques.

ID: 14922 PIN: 195

COMPARISON OF MEASUREMENT UNCERTAINTY VALUES ACROSS CLINICAL CHEMISTRY LABORATORIES IN KENYA

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BACKGROUND-AIM

Laboratory results are expressed as single value but actually represent a dispersion of values attributed to the measurement as result of inherent random variation in the test method. This dispersion of values is characterized by measurement uncertainty. As a result the true value of a measurement is not known at the time of releasing the results. Measurement uncertainty therefore defines an interval within which true value is believed to lie at a stated probability and is a requirement of ISO 15189 accreditation. This review provides an insight into the performance of different analysers and supports decision making during selection

METHODS

Review of measurement uncertainty data from 10 laboratories implementing ISO 15189 in Kenya. Laboratories were selected on the basis of the accuracy and completeness of the data. The UM data was considered complete if it included data on imprecision and bias of the method, combined uncertainty and expended uncertainty. The tests included were ALT, potassium, Glucose, cholesterol, calcium, total protein, urea, bilirubin, albumin and creatinine. The laboratories were categorized into 5 groups per the type of analyser used as follows; Cobas Integra, abbot architect, vitros, AU480 Beckman and Humanstar. The means of each group were calculated for each test and compared

RESULTS

The average uncertainty values were as follows; glucose±0.9mmol/l, potassium±0.3mmol/l, ALT ±5.7U/L, creatinine ±16µmol/l, total cholesterol ±0.34mmol/l, total protein ±4g/l, bilirubin total ± 3.1µmol/l, urea ±1.4mmo/l, calcium 0.16mmol/l, and albumin 4.6 g/l. These values would be considered fit for purpose. Abbot architect analysers had the best uncertainty values for total cholesterol, urea and calcium. Cobas analysers were best in ALT, Total protein, total bilirubin and albumin; Vitros analysers were best in glucose and creatinine while AU480 Beckman was best in potassium

CONCLUSIONS

No single analyser gives the best uncertainty estimates in all analytes in clinical chemistry. Most common analysers used in Kenyan laboratories give measurement uncertainty values that are fit for purpose. Cobas Integra and Abbot Architect chemistry analysers have the lowest uncertainty values for the most analytes included in this study

ID: 14924 PIN: 196

SCREENING FOR BIOLOGICAL MARKER OF DOSE-OPTIMIZATION IN CANCER RADIOTHERAPY

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[2]*Department of Bioscience and Laboratory Medicine, Hirosaki University Graduate School of Health Sciences, Hirosaki, Aomori, Japan*

BACKGROUND-AIM

External radiotherapy of target regions using high energy beams leads to excessive exposure along with individual variation in therapeutic and adverse effects. However, high-precision radiotherapy utilizes 3D-multi detector computed tomography to both confirm target position and administer radiation dose. To install the individual bioinformation in the radiotherapy plan (particularly, radiosensitivity into the target region and/or the around normal tissue), the investigation of biomarkers which are able to estimate their radiosensitivity was performed. The aim of this investigation is to screen for suitable radiosensitivity biomarkers.

METHODS

This study was used the human colorectal cancer-derived HCT 116 cell line. The radiation cell culture model was prepared using X-ray generator (1.0 Gy/min, 150kV, 20mA, and 0.5mmAl + 0.3mmCu filter). The cell damage was analyzed by apoptosis ditection using flowcytometry, micronucleus frequency. The expression analysis of RNAs was performed using Agilent SureScan Microarray scanner G2600D (Agilent technologies Inc.).

RESULTS

We found that cell damage and micronucleus frequency significantly increased dose-dependently after exposure to 6 Gy X-irradiation (1 Gy/min). In contrast, total RNA concentration (69.8–85.2 ng/ml) remained stable in the cell culture supernatant despite radiation dose variation. Additionally, 52 specific microRNAs were detected after exposure to 6 Gy X-irradiation.

CONCLUSIONS

These results suggest that radiosensitivity, including extent of cellular damage in target or normal tissue, can be indirectly estimated by monitoring the expression of microRNAs.

ID: 14931 PIN: 197

IMPACT OF CHANGES IN HB-SIGNALS AROUND THE TEMPLES, SALIVATION, AND AUTONOMIC NERVOUS SYSTEM ACTIVITY ARISING FROM EXPOSURE TO 2 TYPES OF ESSENTIAL OILS ON THE SLEEP DEPRIVED STATE

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BACKGROUND-AIM

Essential oils are used for alleviate stress and fatigue. In this study, we investigated changes in Hb-signals around the temples, amount of salivary secretion, and autonomic nervous system activity in response to exposure to 2 types of essential oils (lavender and rosemary) , and also assessed their influence on fatigue arising from sleep deprivation.

METHODS

Subjects were 5 students at our university. Designated as having adequately slept after approximately 8 hours, and to be sleep deprived after sleeping for only 5 hours. Hb-signals around the temples was measured using a near-infrared spectroscopy device. Saliva was collected and then weighed (g). Autonomic nervous activity was measured using an autonomic nerve function testing apparatus.

RESULTS

While sleep deprived, no significant changes were observed in terms of overall perception of fatigue, but drowsiness scores increased significantly. Parasympathetic nerve activity increased significantly following inhalation of the lavender oil when subjects had adequately slept and showed the tendency to increase when subjects were sleep deprived. This activity was also observed to increase significantly when subjects were sleep deprived after subjects smelled the rosemary oil. In contrast, sympathetic nerve activity tended to decrease during sleep deprivation, although this activity remained unchanged when subjects had adequately slept and smelled the lavender oil. This activity tended to decrease after smelling the rosemary oil when subjects were adequately slept and remained unchanged when subjects were sleep deprived.

CONCLUSIONS

The amount of saliva produced increased after inhalation to both of the essential oil tested, suggesting that exposure contributes to improving the condition of the mouth. However, also indicated that the rosemary oil was more effective than lavender oil in this regard, and its effects are also more influenced by sleep deprivation. We believe that the properties of different essential oils are related to their impact on the sleep deprived state, and that further study is necessary.

ID: 14932 PIN: 198

THE RELATION BETWEEN UNUSUAL URINARY SEDIMENT AND TAMM-HORSFALL PROTEIN (THP) IN CALCIUM STONE PATIENTS

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BACKGROUND-AIM

We reported the urine of calcium stone patients contains unusual urinary sediment components (characteristic mucus bodies) and exhibits a high occurrence rate of Tamm-Horsfall Protein (THP). In addition, the urine sediment THP concentration was significantly ($p<0.05$) higher in calcium stone patients than in healthy subjects. We examined electrolyte concentrations in urine as well as the concentration and isoelectric point of THP in urine supernatant (sup.) and sediment in order to elucidate the mechanisms underlying the occurrence of characteristic mucus bodies.

METHODS

Spot urine samples were collected from 26 patients and 4 healthy subjects. Urine sediment was prepared according to the urine sediment test method of the Japanese Committee for Clinical Laboratory Standards. THP concentration is sandwich enzymelinked immunosorbent assay was used. Na, K, and Cl were measured using the electrode method and Ca was determined using the Arsenazo III method; P was using a direct molybdate method; and Mg was using a xylidyl blue method. Isoelectric point of urine and urine sediment THP analyzed by Two-dimensional electrophoretic method.

RESULTS

The Na concentration was significantly ($p<0.05$) higher in patients than in healthy subjects. In addition, a significant ($p<0.05$) positive correlation was observed between the THP concentration in patient urine sediment and the Na, K, Cl, Ca, and Mg concentrations in urine. The molecular weight of THP in urine sediment and sup. of healthy subjects was 90 kDa; the pI of THP was approximately 4 in both the sup. and sediment. The molecular weight of urine sup. and urine sediment THP in patients expressing characteristic mucus bodies was also 90 kDa; however, the sup. THP concentration was lower than that of sediment THP and had a primary pI of approximately 4. In contrast, sediment THP had a pI of approximately 4 and 8.

CONCLUSIONS

The presence of characteristic mucus bodies in the urine of patients suggests an increase in the secretion of THP, which is an inhibitor of urolith formation. Further studies will be required to elucidate the changes in the sugar chain structure of THP constituting the characteristic mucus body and the relationship with the occurrence or reoccurrence of urolithiasis.

ID: 14934 PIN: 199

THE ATHEROPROTECTIVE EFFECTS OF HIBISCUS LEAF POLYPHENOLS AGAINST TNFALPHA-INDUCED MIGRATION AND PROLIFERATION OF VASCULAR SMOOTH MUSCLE CELLS

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BACKGROUND-AIM

Atherosclerotic plaque is generated partly by proliferation and migration of vascular smooth muscle cells (VSMC), are always accompanied by markedly induced expression of proflammatory cytokines, especially tumor necrosis factor-alpha (TNF). Previous studies have indicated that Hibiscus sabdariffa leaf, the edible part of H. sabdariffa Linne (Malvaceae), possesses hypoglycemic, hypolipidemic, and antioxidant effects, and induce tumor cell apoptosis. In this study investigations were conducted to examine the mechanism of the anti-atherosclerotic potential of H. leaf polyphenols (HLP) which is rich in flavonoid.

METHODS

Firstly, we demonstrated that VSMC A7r5 cells pre-treated with TNF triggered migration and proliferation, and affected the activity of matrix metalloproteinase-9 (MMP-9). Non-cytotoxic doses of HLP abolished the TNF-induced the secretion of MMP-9 and cell migration via inhibiting the Akt/AP-1 pathway.

RESULTS

On the other hand, the results showed that HLP induced phosphorylation of p53, promoted expression of p27, inhibited phosphorylation of Rb, and thereby blocked the G1 to S transition in the cell cycle in the TNF-treated A7r5 cells. Our data showed that HLP inhibited TNF-induced both migration and proliferation of A7r5 cells.

CONCLUSIONS

These results suggested that HLP might serve as a potential antiatherogenic agent.

ID: 15191 PIN: 2

WORK SAFE WITH FORMALDEHYDE - FORMALDEHYDE, A POTENTIALLY HUMAN CARCINOGEN

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BACKGROUND-AIM

In pathology laboratories formaldehyde (10 % neutral buffered formalin (NBF)) is the most commonly used fixative. NBF is a good fixative, but is associated with great health risks, especially allergies and risk of cancer. Are we doing enough to protect us who works with NBF?

METHODS

We looked at all the steps where we use and handle NBF in the production and in the transport of the samples. We went through procedures at the laboratory and checked that safe practices for grossing were followed. Risk analysis for transport of samples done, in case of spillage. We had a fume hood and cabinets with extractor, but want to measure the concentration of NBF in the air. Staffs get dosimeters for monitoring exposure to formaldehyde in the lab during grossing and by vacuum packing left-over gross specimens for storing. Samples were analyzed by ultraviolet detection liquid chromatography (LC-UV) at STAMI – The National Institute of Occupational Health. The concentration of formaldehyde is specified in ppm (part per million).

RESULTS

Average exposure during one working day should not exceed 0.5 part per million (ppm) say The Norwegian Labour Inspection Authority. They recommends that the exposure level be below ¼ of the administrative standard. NBF-concentration measurement shows that work with vacuum packing 0,0115 ppm, grossing by pathologist 0,021 ppm and grossing by biomedical laboratory scientists 0.017 ppm. These are values far below administrative standard
Procedures are constantly updated and the department's quality coordinator has made an E-learning course available for handling NBF. We have put together a first aid kit with equipment for collecting NBF-spills. It consist of respiratory protective equipment protections, safety goggles, gloves, trash bags and absorbent mats and is available during transportation of samples and in the lab.

CONCLUSIONS

A long as work following our procedures, we have a safe working environment. Key points are awareness and information. Results from our measurements show that NBF exposure levels are far below the regulation treshold, and should be concidered safe for the staff.

ID: 15113 PIN: 20

CONSTRUCTION OF A PATIENT IDENTIFICATION SYSTEM FOR BLOOD COLLECTION AS AN IMPROVEMENT FOR PATIENT SAFETY

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BACKGROUND-AIM

In recent decades, Taiwan has embarked on a journey to become one of the safest healthcare systems in which patient safety is always on the top of the priority list. The Ministry of Health and Welfare has aimed to increase the accuracy of patient identification in order to minimise human errors and reduce risks.

METHODS

A patient identification app contains all the information of the patient. By scanning the QR code given to the patient and the code on the blood-collecting tube, the identity of the patient can be assessed. Only when correct codes are present, data as well as the time of blood collection can be recorded and uploaded to the system.

RESULTS

In June 2017, the patient identification system was installed. According to the record of daytime wards from June to December 2017, 0% of error was presented due to patient discrimination.
Also, 5632 of blood samples were collected and 4224 of them were collected with the use of the system (Occupying 75% of total sample).

CONCLUSIONS

Before the patient identification system was applied, Medical Technologists collected blood samples after matching the paper examination form and the waistbands worn on patients. However, unintended or unexpected harms or mistakes may arise due to incorrect patient identification. This resulted in blood collection of wrong patients and poor record the exact time of blood collection. On the other hand, the duration of blood collection operated by Medical Technologists cannot be monitored. After the establishment of the patient identification system, the system based on information program with the combination of patient tablet and QR code scanner dramatically improves the accuracy of patient identification. The main reasons for the system not covering all blood collection include: unstable network, unworn waistbands or unidentified QR codes. The possible improvements include enhancing the network signal, ensuring the integrity and identity of worn waistbands. After the instalment the patient identification system, increased accuracy can be observed and it has been introduced to electrocardiogram. This system was also introduced to pharmacy department, radiology department as well as nursing department to improve patient identification to improve patient safety and risk reduction.

ID: 14936 PIN: 200

TO RESEARCH HECSAA EXTRACT INDUCED GROWTH INHIBITION AND APOPTOSIS IN HEPATOCELLULAR CARCINOMA IN VITRO AND IN VIVO

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BACKGROUND-AIM

HeCSAA is a frequently used traditional Chinese medicine that treats acne, diuresis, anti-inflammatory, antibacterial, and arthritis. This study aimed to investigate the anti-hepatoma effect of HeCSAA extract. Hepatocellular carcinoma (HCC) is a frequent and fatal human cancer with ineffective therapy leading to wide side effects and prognosis for patient.

METHODS

The study design is divided into two directions: (1)in vitro studies, the cytotoxicity of HeCSAA extract will be tested by MTT assay, cell cycle distribution will be analyzed by flow cytometry, apoptosis morphology was observed by TUNEL assay and cell apoptosis mechanism was determined by Western Blot; (2)in vivo studies, the tumor suppression effects and survival rate of HeCSAA extract will be demonstrated by Nude mice chemotherapy model, the physiology state will be assessed by serum biochemistry value and pathological toxicity will be analyzed by HE and IHC staining.

RESULTS

HeCSAA was treated the HCC cell lines in vitro, displaying inhibition effects on cell proliferation and G0/G1 phase cell cycle arresting in dose dependent manner. The protein levels of p53 and p21 were increased and cyclin and cyclin-dependent kinase were decreased following concentrations of HeCSAA treatment. Moreover, after HeCSAA treatment, the cell population of sub-G1 phase was increased and the expression levels of apoptotic proteins were activated, including pro-caspase 3, 8, 9 suggesting HeCSAA activated caspase cascade. HeCSAA was treated BALB/c nude mice bearing HCC tumor in vivo and presented suppression of HCC tumor growth via inhibition of autocrine proliferation and activation of caspase cascade. In summary, HeCSAA induced cell cycle arrest and activated apoptosis result in HCC cell growth inhibition in vitro and in vivo and demonstrated less toxic to normal cells and organs.

CONCLUSIONS

Overall, these data serve as preliminary significant roles of HeCSAA in hepatocellular carcinoma cells, and suggest that HeCSAA may be a promising therapeutic candidate for hepatocellular carcinoma.

ID: 14943 PIN: 201

DEVELOPMENT OF ENZYMATIC MEASURING METHOD OF ETHANOLAMINE PHOSPHATE PART 3.

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BACKGROUND-AIM

Manic-depressive illness is a serious problem in Japan. As such, it is important to note and treat this disease early, but the lack of objective diagnostic criteria makes diagnosis difficult. Ethanolamine phosphate (EAP) was newly presented as a major marker, and capillary electrophoresis time-of-flight mass spectrometry (CE-TOFMS) is used to measure serum EAP. However, a simpler method is needed because it requires expensive instrument. Therefore, we aimed to create a method to measure EAP with high sensitivity using enzymes, and developed an enzymatic assay using ortho-phosphoethanolamine phospho-lyase (PEAlyase). This enzyme acts on EAP to produce phosphoric acid, acetaldehyde, and ammonia. In this enzymatic assay, phosphoric acid was reacted to produce 3 M hydrogen peroxide from 1 M EAP. First, the endogenous substances in the serum need to be eliminated. We used N-Ethyl-N-(2-hydroxy3-sulfopropyl)-3-methylaniline and sodium salt (TOOS) as a coloring reagent. This method had good linearity, but the limit of detection and eliminating ability of phosphoric acid was insufficient. In order to solve this problem, we used sodium-10- (carboxymethylaminocarbonyl)-3,7-bis(dimethylamino)phenothiazine(DA-67) as a coloring reagent.

METHODS

We examined the linearity, eliminating ability of phosphoric acid, hypoxanthine, xanthine, and uric acid, and the limit of detection. All examinations were conducted with a Hitachi 7180 automated analyzer.

RESULTS

The present method demonstrated linearity to 35 µmol/L. The eliminating ability of phosphoric acid was improved from 0.7 mmol/L to 2.0 mmol/L. The limit of detection was also improved from 1 µmol/L to 0.4 µmol/L.

CONCLUSIONS

As DA-67 has a higher molar extinction coefficient, we were able to improve the limit of detection. The same reason also enabled us to reduce the sample volume, resulting in improved elimination of phosphoric acid. However, these results are inadequate because the EAP value in depression patients is lower than 1.5 µmol/L and the phosphoric acid levels become higher with some diseases. In order to resolve these problems, we plan to create an ultra-high sensitivity detection system using metals and chelating color reagents.

ID: 14942 PIN: 202

AUTOMATIC HEMATOLOGY ANALYZER FOR BLAST DETECTION OF WBC COUNT BELOW 1.0 X10^3/UL IN SYSMEX XN9000

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BACKGROUND-AIM

"Blast" identified in the bodies of hemato-oncology patients are valuable for an indicator of diagnosis, and it can be granted a clinical significance to determine progression and development of disease.
I tried to evaluate the effectiveness of the equipment by determining whether or not the Automated Hematology Analyzer accurately detects Blasts through Flag, in case of patients who I confirmed Blast through Manual Slide Review.

METHODS

I compared and analyzed the Blast detection rate and sensitivity to Flag of Automated Hematology Analyzer (XN-9000) with a total of 100 (WBC Count below 1.0 X10^3/uL) bodies which I confirmed Blast through Manual Slide Review among the hemato-oncology patients' bodies.

RESULTS

The concordance rating of Manual Slide Review among a total of 100(WBC Count below 1.0 X10^3/uL) samples was 97% in SYSMEX XN9000. The disconcordance rating between an Automated Hematology Analyzer and Manual Slide Review was 3% .

CONCLUSIONS

I confirmed the reliability of an Automated Hematology Analyzer Blast Flag by noticing that the concordance rating of Manual Slide Review of an Automated Hematology Analyzer was 97% on average in Blast Detection. I confirmed the specificities of an Automated Hematology Analyzer to Blast Flag sensitivity as Manual Slide Review and Blast Flag results are consistent with a tendency.I think Blast Flag detected in other kinds of Automatic Hematology Analyzer can change the retest criteria of a smear.

ID: 14947 PIN: 203

CAN URINARY TAMM-HORSFALL PROTEIN ESTIMATION PREDICT THE PRESENCE OF A URINARY CAST?

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BACKGROUND-AIM

Tamm-Horsfall protein (THP) was first characterized by Tamm and Horsfall as an inhibitor of hemagglutination. THP is synthesized in the thick ascending limb of the loop of Henle and is the most abundant protein in human urine, excreted at an average rate of 50–100 mg/day. An increase or reduction in the excretion of urinary THP indicates various clinical conditions and diseases. This protein is known as a substrate of urinary casts. The formation of urinary casts suggests various clinical conditions in an individual. We often experience the presence of not a few hyaline casts in approximately 8% of dipstick-negative urine samples: these samples are usually not subjected to microscopic examination. Therefore, the present study aimed to determine whether the estimation of urinary THP could predict the presence of urinary casts.

METHODS

THP was isolated from urine by salting out: 15% (NH4)2SO4 and 72.5 mmol/L sodium chloride were added to 500 µL of urine sample. THP in the urine sample was detected at Ex/Em=280/325 nm via spectrofluorometry. Urine samples were divided into 2 groups: group A, healthy subject (male: female = 26: 21, Urine protein(-), Cast(-)), group B is disease subject (male: female = 5: 7, eGFR>60, Urine protein(-), Cast(+)). Thereafter, we compared THP levels between groups A and B via the Mann-Whitney U test.

RESULTS

The reference standard interval for urinary THP in healthy female subjects (n = 21) was 28.2–82.6 mg/g•Cre. THP range was significantly higher in women than in healthy men (n = 26; 12.7-55.2 mg/g•Cre) ($p<0.01$). Furthermore, THP levels were significantly different between groups A and B among men ($p<0.05$, Area Under the Curve [AUC]: 0.854). THP levels were slightly but not significantly higher in group B than in group A among women not ($p= 0.19$, AUC: 0.691).

CONCLUSIONS

The present results indicate that urinary THP levels tend to increase in accordance with the situation of cast appearance. We intend to determine the cause of differences between men and women in more detail in future studies.

ID: 14955 PIN: 204

SYSMEX UF-5000 IN MICROBIOLOGY - RAPID URINE ANALYSIS

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BACKGROUND-AIM

Sysmex UF-5000 fluorescence flow cytometer is intended for rapid urine analysis. It counts and classifies particles such as leucocytes and bacteria in urine. We wished to find out if the Sysmex UF-5000 flow cytometer could be used in a microbiology lab as a screening tool for urine samples before culture plating.
Culture results have a turnaround time of 24-48 hours with traditional culture plating. But is it possible to identify and select urine samples prior to culturing and thus reduce the number of urines that need culture plating? And likewise, can flow cytometry also help us cut the response time for urines that are either negative or contaminated? Finally, we asked ourselves if susceptibility testing directly from urine would be synonymous with automatic susceptibility testing from culture.

METHODS

We randomly selected 1000 urine samples over a period of 3-4 weeks. On each selected day, 150-200 samples were simultaneously culture plated and analyzed on Sysmex UF-5000. 100 out of these 1000 samples were also subjected to susceptibility testing. The samples were analyzed and evaluated based on the count and presence of bacteria, leucocytes and epithelial cells. The Sysmex UF-5000 also determines if bacteria present are gram positive and/or gram negative. This helped us select 100 urines that were cultured directly onto susceptibility plates containing antibiotic discs. We have compared the results we obtained with the current method of culture plating and automatic susceptibility testing of bacteria cultures.

RESULTS

In our study, we found that Sysmex UF-5000 is an easy and rapid way to separate urines that need culture plating from those that do not. We also found that susceptibility data for gram negative bacteria are the same whether it is tested directly from urine or from a bacteria colony.

CONCLUSIONS

Sysmex UF-5000 can help reduce the response time for urine samples that are negative or contaminated. It can also aid us in selecting samples that needs to be cultured. In identifying urines containing a significant number of gram negative bacteria, susceptibility results may be released much earlier than with the traditional method.

ID: 14968 PIN: 205

STERNHEIMER STAIN ENHANCES THE DIFFERENTIAL COUNTS OF CASTS AND THE ASSESSMENT FOR THE CORRELATIONS BETWEEN DIFFERENTIAL TYPES OF CASTS AND ESTIMATED GLOMERULAR FILTRATION RATE.

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BACKGROUND-AIM

Types of casts are good references for differential diagnosis on kidney diseases to physicians. However, urinary sediment microscopy are usually carried out by young medical technologists and the types and counts of casts could be misclassified and under estimated. Some guidelines suggest that the staining technique can improve the report quality of urinary sediment microscopy. So far, the relationship between types of cast and estimated glomerular filtration rate (eGFR, mL/min/1.73 m^2) is seldom discussed. Thus, the performance of staining technique and the relationship between types of casts and eGFR are worth to be investigated.

METHODS

After the urine samples were analyzed by a urinalysis automation system and the data were not compatible, those samples would be assigned for a urinary sediment microscopy. The protocol of urinary sediment microscopy followed the guideline of Taiwan Society Laboratory Medicine GP-U01(1). The results of casts differential counts (unstained and stained) and the correlated eGFR were analyzed by Microsoft Excel.

RESULTS

Totally, there were 605 cases were enrolled in this study. In 103 cases enrolled for the evaluation of the staining technique on urinary sediment microscopy, there were 44 cases with positive finding after the staining technique was applied. Thus, the sensitivity of the unstained urinary sediment microscopy was 0.573. The unstained average cast count was 1.39 /LPF and the average stained count of cast was 3.41/LPF. The paired t-test was significant difference ($p < 0.01$). There were 502 cases enrolled for the evaluation of the correlation between cast types and eGFR. Based on the condition of eGFR ε 60, the urinary protein positive group compared with the urinary protein negative group, the ratios of cellular casts and granular casts were significantly increasing ($p < 0.05$). In eGFR > 60 and urinary protein negative group, over half of cases could find the presences of cellular casts and granular casts.

CONCLUSIONS

The kidney function evaluation only based on serum creatinine would be not sufficient. And, the Sternheimer staining technique significantly enhances the differential counts of casts and improve the report quality of urinary sediment microscopy.

ID: 14972 PIN: 206

AN EVALUATION STUDY OF AN AUTOMATED IFA PROCESSOR – BEELINE 320 SYSTEM WITH ESTABLISHED MANUAL METHODS

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BACKGROUND-AIM

Using HEp-2 as substrates to test anti-nuclear antibodies (ANA) has been considered a gold standard for diagnosing autoimmune disease by American College of Rheumatology. Beeline 320 manufactured by HTZ limited is a dedicated IFA processor providing mid-sized laboratory a cost-effective automation for IFA assays. The aim of the study is to evaluate the performance of running ANA and LKS on Beeline 320 automatically.

METHODS

55 routine samples (40 ANA samples and 15 LKS samples) that were carried out by manual IFA commercial kits (both manufactured by MBL) were reevaluated by HEp-2000 and LKS substrates on Beeline 320 automatic IFA processor.

RESULTS

The Beeline 320 shows a relative sensitivity of 100%, relative specificity of 92% and relative agreement 96%. There was no carryover observed. The testing results of EQA samples from NEQAS were all within acceptable range indicates the accuracy of the Beeline 320 system. The data also represent good precision of the system. The turnaround time of the operator could also reduce 1216.6 hr per year.

CONCLUSIONS

The comparison results demonstrate equivalence of both methods. The evaluation results suggest Beeline 320 is a reliable system to process IFA assays automatically. It is also able to reduce the turnaround time of routine workflow. Furthermore, Beeline 320 is able to integrate with automated ANA interpretation system which provides a more flexible option for the lab in the future.

ID: 14980 PIN: 207

QUALITY IMPROVEMENT IN HER-2/NEU ONCOGENE TESTING BY PLAN-DO-CHECK-ACT (PDCA) METHODS

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BACKGROUND-AIM

There are many data showed amplification in Her-2/neu oncogene leading to poor prognosis in patients with breast cancers. Immunohistochemistry (IHC) and in situ hybridization (ISH) are the two main methods in clinical practice for assessing HER2 gene status. The aim of this study was to improve the quality of Her-2/neu oncogene testing by Plan-Do-Check-Act (PDCA) methods in our workflow management.

METHODS

First of all, improved complicated and created a new simplify mode of practice for clinical order. Secondly, evaluation HER2/neu protein overexpression status using by IHC staining methods for breast cancer patients in first time. And then, comparions ISH methods when breast carcinoma samples which had IHC weakly immunoreactions positive (2+) , immediately. In addition, we' re choose dual color silver-enhanced in situ hybridization (DISH) instead of fluorescence in situ hybridization (FISH) methods in our laboratory.

RESULTS

The average number of days from breast biopsy to HER2 ISH test report was reduced from 32 days to 7 days and DISH method can be performed more rapidly than FISH which is technically demanding, expensive, requires fluorescence microscopy, and its fluorescence signal fades over time.

CONCLUSIONS

There is a trend of increasing the number of breast cancer year by year in our hospital. How to enhance the effectiveness of the work and to improve the quality becomes an important issue. Turn around time of the determining the Her-2/neu oncogene status in breast cancer with the DISH method allows the further progress of the disease to be predicted, the right treatment to be chosen and the response to the treatment to be foreseen.

ID: 15004 PIN: 208

URINARY BIOMARKERS OF LETHAL/SUBLETHAL IONIZING RADIATION DOSES

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BACKGROUND-AIM

The exposure of radiation workers to ionizing radiation is controlled by attaching physical or chemical dose-measurement devices to their bodies and performing regular medical examinations. In contrast, because a personal dosimeter is rarely used for the general public, it is almost impossible to perform a real-time estimation of radiation exposure. Moreover, when it comes to patients' medical exposure to radiation, because priority is given to the medical practice, there are no restrictions on the dose. Therefore, a detailed health evaluation method for radiation exposure is not performed. Recently, radiation biodosimetry using biogenic substances has become an area of focus, and some researchers have investigated the fundamentals of this approach with the goal of developing it with higher precision. To comprehensively understand these radiation exposure phenomena, the urine components 8-oxodeoxyguanosine (8-OHdG), which can be easily extracted and is a marker of oxidative DNA damage, and malondialdehyde (MDA), which is a product of lipid peroxidation, were considered as biomarkers.

METHODS

Urine samples from mice (C57BL/6NJcl, male, 8-weeks old) were collected after 24 h or 72 h of X-ray irradiation (1.0 Gy/min). The effect of acute radiation syndrome on bone marrow cells was evaluated using flowcytometry (BD, FACS Aria SORP). 8-OHdG and MDA were measured using immunochromatography and by absorption analysis using a thiobarbituric acid reaction, respectively.

RESULTS

The urinary concentration of 8-OHdG was 36.5 ± 6.0 (ng/mg-creatinine), and the concentration remained similar up to 4 Gy exposure. An approximate 2.3-fold and 3.6-fold significant increase in 8-OHdG under 7 Gy and 10 Gy exposure was observed, respectively. Furthermore, a significantly higher concentration of MDA (3.9-fold, after 24 h) under 10 Gy exposure was observed than under the non-irradiation condition [1.1 ± 0.2 (㎛M/mM-creatinine)].

CONCLUSIONS

These results suggest that 8-OHdG and MDA are urinary biomarkers of lethal/sublethal ionizing radiation doses.

ID: 15015 PIN: 209

IMMUNOLOGICAL CRITERIA FOR THE DIFFERENTIAL DIAGNOSIS OF THYROID DISEASE

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BACKGROUND-AIM

Thyroid autoimmune disease is the major factor underlying hypothyroidism and hyperthyroidism and tends to occur in a genetically predisposed population. The major thyroid autoimmune diseases are: Hashimoto's diseases and Graves' diseases.

METHODS

Quantitative measurement of antithyroid peroxidase (TPO) antibodies and autoantibodies to thyroglobulin (TG) in serum, EDTA, and heparinized plasma, as an aid in the clinical diagnosis of thyroid diseases. Serum concentration of Anti – TPO Ab and anti – TG Ab were determined by are a solid-phase, enzyme – labeled, chemiluminescent sequential immunometric assays using analyzer Immulite 2000.

RESULTS

About 50% of individuals with autoimmune hypothyroidism, will have detectable anti-Tg autoantibodies, while 90% will have detectable anti – TPO autoantibodies. In Graves' disease, both types of autoantibodies are observed at approximately half of these rates. 10% of healthy individuals have TG autoantibodies at low levels, higher concentracions are found in 85% of patients with Graves' diseases and Hashimoto's thyroiditis, respectively.
Patients with Graves' disease and Hashimoto thyroiditis showed significantly higher concentrations of anti-TPO and anti-TG compared with healthy individuals. ($P < 0.001$). Following results were obtained: values of anti-TPO in patients diagnosed with Grave's disease compared to the control group were 3.7 ± 0.46, and in patients with Hashimoto thyroiditis 238.5 ± 0.95. Values of anti-TG in patients diagnosed with sc Graves' disease compared to the control group were 333.3 ± 0.55, Hashimoto thyroiditis 500.5 ± 0.95.

CONCLUSIONS

The consensus opinion today is that they are merely disease markers. It is felt that the presence of competent immune cells at the site of thyroid tissue destruction in autoimmune thyroiditis simply predisposes the patient to form autoantibodies to hidden thyroid antigens.

ID: 15130 PIN: 21

IMPROVEMENT OF THE MEDICAL RESULT REPORTING SYSTEM BASED ON PATIENT'S SEASONAL VISITING PATTERN

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BACKGROUND-AIM

It is extremely stressful in clinical diagnostic departments of large medical institutes, as hundreds of anxious patients wait for their test reports on a daily basis. Smooth and effective operation protocols are an important factor for quick patient report turnaround and for physicians to make timely decisions.

METHODS

This study analyzed information collected from outpatient diagnostic clinics from 2014 to 2016. The data collected included patient waiting time for blood collection, patient report turnaround time and other related factors. Daily information was grouped into half-hour intervals from 06:30-22:00 and month-to-month and year-to-year comparisons for each half hour interval were performed. Completion rate of total patient numbers, patient waiting time for blood sampling, and waiting time for the report were subsequently further analyzed.

RESULTS

According to the analysis, patients' medical behavior was affected by outside temperature. There was a 2-3% difference in sampling patients during the 07:00-08:00 interval when comparing the warmer seasons spring and summer (April to October), to the cooler autumn and winter seasons (November to March). During this interval the average number of blood tests in spring and summer seasons accounted for 11-12% of the total daily volume, whereas the autumn and winter seasons accounted for 8-10%. This difference in patient volume lead to a TAT (Turn Around Time) delay of about 3-4%. Due to a higher patient visiting volume in earlier hours during the summer season, the patient waiting time increased, leading to a completion rate below the target threshold.

CONCLUSIONS

We established the following improvement strategies:
1. Timely arrangement of manpower support, in order to complete all blood sample testing requests before 8:30, when the clinic starts to minimize any cumulative volume.
2. in order to start the sample analyses on time and have complete patients' medical reports for visiting at 8:30.
3.After introducing the two improvements described above, the completion rate for CBC within 40 minutes waiting-time increased from 85% to over 90%. The completion rate for blood coagulation tests also increased from 82% to 86%.
This study concluded that the quality of comprehensive examinations can be improved by adjusting routine operating procedures to patients' medical behavior.

ID: 15034 PIN: 210

SERVICE PROGRAMMING AND BENEFIT EVALUATION OF IN SITU RECONSTRUCTION IN AN OLD MEDICAL LABORATORY

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BACKGROUND-AIM

Our hospital was built up in 1895,with the laboratory opening thereafter since 1983. An automatic test tube preparation system for phlebotomy is required to fit the examination amount up to 2.56 million tests per year; however, the installation failed due to small space. The plan of in situ reconstruction emerged in 2016. A baptism to face could be expected, during construction, to maintain service and turnaround time of examination because of few quotable references then. We hope to share our experience to other laboratories.

METHODS

Formulated plan, approved by our hospital and subsequent acquisition of building permit in indoor decoration, was conducted:1. in situ reconstruction 2.emergency laboratory and blood banking resite 3.heavy-metal laboratory set-up 4.installation of automatic test tube preparation system and intelligent calling system. The construction specifications were as follows: 1.sufficient electricity and web supply in compliance with current fire safety and construction regulations 2.flowline taken into account 3. 3 phase by 3 area work with partial reduction in some areas 4. well-planned personnel security measures 5.full communication with relevant departments 6.previously arranged volunteer guides for patients 7.posters put up for guidelines.

RESULTS

After 7 months,installed items accomplished were listed as belows:1. 726 square meter in laboratory area 2.double pneumatic tube specimen delivery system 3. ICP-MS analyzer for heavy metal examination 4.automatic test tube preparation system for phlebotomy with increased blood collection counters 5. intelligent calling system, with priority for elderly 6.waiting area for wheelchairs only. We set 3 durations to evaluate the benefit: before (2015/8~2016/2), in the course (2016/3~2016/9) and after (2016/10~2017/4).The outcome by quality indicator was compared in order: 1.waiting time ratio for blood draw within 10 minutes(%): 63.4,56.4,83.9 2.satisfaction degree of report-waiting(%): 73.8,76.5,79.9 3.achieving rate of emergency report within 30 minutes(%):77.8,81.1,85.4.

CONCLUSIONS

There is need for old laboratory reconstruction,and what's more important is appropriate planning in advance. Maintenance of service quality should be the first priority to provide a safe, fast, friendly and modern health care institution afterwards.

ID: 15036 PIN: 211

EVALUATE UF1000I BACTERIA SCATTERGRAM AS A TOOL TO SCREEN THE BACTERIAL GRAM STAIN

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BACKGROUND-AIM

Urinary Tract Infection is the most common bacterial infection. Urine culture is the confirm test, but time-consuming. In clinically, empirical antibiotic well be used first, but part of the ratio will be invalid. As the expectation for this experience, assessing an easy and convenient examine tool like UF 1000i is important.

METHODS

According to the rules of Sediment chanel and Bacteria chanel which are based on UF1000i, 146 UTI patients have been screened. The evaluation is from the result of Bacteria Scattergram and Gold Standard. The result is based on UF1000i function.

RESULTS

According to this experiment, the percentage of Gram-negative bacilli cultured in urine was 76%, of which Escherichia coli accounted for 60%.
The test sensitivity with UF1000i Bacteria Scattergram detection bacill was 87% , and cocci was 73% . Positive Predict value was 83.9% in bacilli, and 43.5% in the cocci. Additionally, the Bacteria Scattergram has been found that Escherichia coli and Klebsiella Pneumomiae show a 10-20 degrees angle which are located in Rods. Compared with the Bacteria Scattergram, Enterococcus faecalis and Streptoccus agalactiae shows a 10-30 degrees angle. The results show a slight difference. However, it shows obvious difference in Staphylococcus aureus which is based on cocci has an about 20 -50 degree angle.

CONCLUSIONS

The experiment declares that we could use Bacteria Scattergram as a tool to provide positive prediction for cocci or rods and for the positive prediction of Rods could reach up 84%. If the angle of Bacteria Scattergram is up to 40 or down to 20, the G(+) G(-) classification will be more credible. On the other side, the angle between 20-40, it is recommended to using Gram stain as a confirm tool can increase the sensitivity.

ID: 15040 PIN: 212

PERFORMANCE OF GLYCATED HEMOGLOBIN (HBA1C) FOR DETECTING NEWLY DIAGNOSED DIABETES AND PRE DIABETES IN DIFFERENT ETHNICITIES OF PAKISTAN

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BACKGROUND-AIM

To calculate the mean HbA1c level in newly diagnosed diabetes mellitus (DM) patients of our population and to determine difference due to ethnicity.

METHODS

A cross sectional study was conducted from July 2014-November 2015 at the Section of Chemical Pathology, Departments of Pathology & Laboratory Medicine and Medicine, AKUH. After approval from institution's ethical review committee, all consecutive subjects with suspected of DM above 18 to 65 years, coming for oral glucose tolerance test (OGTT) were included in the study. The informed consent was taken after explaining procedure. Blood sample for OGTT were taken in sodium fluoride tube at baseline, two hours post glucose load (2-hr PG) and analyzed immediately. Additional 5ml blood sample was taken in EDTA for HbA1c and stored at -80oC until analysis. Data was analyzed using the Statistical Package for the Social Sciences (SPSS version 19.0 for Windows).

RESULTS

Total 146 subjects who underwent OGTT testing for diagnosis of type 2 DM were included in this study. Amongst them majority were females (52%) and mean age of study participants was 44.9±13.2years. Mean HbA1c of the study subjects was in prediabetic range (6.2±1.0). Positive correlation was observed between age and HbA1c (5.8±0.98 in <40yrs vs. 6.4±1.0 in >40yrs subjects; r 0.3, p<0.000*), while amongst genders; males had higher HbA1c than female (6.4±1 vs. 6.1±1; r 0.2, p<0.05).
HbA1c levels were significantly different amongst the ethnicities (p-value <0.03*) showing highest mean HbA1c, FPG and 2-hr PG levels in Sindhis. Comparison gave the following correlation coefficient, HbA1c was positively correlated with FPG (r=0.69**, p value <0.001) and 2-hr PG (r=0.61**, p value <0.001).

CONCLUSIONS

The mean levels of HbA1c among Sindhi population are greater than that in other populations. Therefore, a single value of HbA1c ε6.5% is not adequate to identify patients with impaired diabetes and early diabetes and we suggest that new cutoffs for HbA1c should be defined for our population

ID: 15042 PIN: 213

A CASE OF UNUSUAL PRESENTATION OF ANTIPHOSPHOLIPID SYNDROME

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BACKGROUND-AIM

Primary antiphospholipid syndrome is defined by the occurrence of venous and arterial thromboses, often multiple and recurrent fetal losses. Abdominal symptoms rarely present in antiphospholipid syndrome and the causes includethrombosis at the hepatic vein, inferior venacava, portal vein and intestinal ischemia.

METHODS

We present a thirty two old female who presented with pain abdomen and low grade fever since one week, suspected of having pancreatitis. Antibiotics was administered suspecting infections. Inflammatory markers of total leucocyte count and differential count were within limits. Abdominal ultrasonography revealed portal vein thrombosis with mild ascites. The patient had three living children and no history of fetal loss. Enhanced abdominal CT also confirmed the portal vein thrombosis. The only elevated thrombotic parameter which was PT_INR and homocysteine. Antinuclear antibody was positive at 1:100 for mitotic spindles, while anti-dsDNA and anti-Sm were negative. Although antiphospholipid antibodies were within normal limits, the lupus anticoagulant test (dilute Russell viper venom method) was strongly positive.

RESULTS

According to the guidelines on the investigation and management of antiphospholipid syndrome, it is present if at least one clinical criteria and one of the laboratory criteria are met. The patient was initiated with very high dose of intravenous heparin which was later changed to vitamin K antagonist (warfarin). Her abdominal symptoms gradually improved and she had an uneventful recovery.

CONCLUSIONS

It is imperative to have an early diagnosis for proper clinical management with anticoagulant therapy and wait for conventional features of antiphospholipid syndrome.

ID: 15046 PIN: 214

ENHANCING STAFF'S BODY FLUID ABNORMAL CELLS FINDING RATE THOUGH EDUCATION AND CASE DISCUSSION

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BACKGROUND-AIM

Body fluid effusion can be separated form transudate or exudate. One of the reasons causing exudate is malignancy. According to the CLSI H56-A-Body Fluid Analysis Guideline, malignant cells may present in effusion. Effusion fluid may sent to the general microscopy laboratory for routine test, the ability to identify atypical cells is important.

METHODS

We collected 1218 and 1575 of Body fluid effusion in January-August 2016 and 2017. The specimens include pleural effusion 362(30%), ascites 489(40%), cerebrospinal fluid 367(30%) in 2016, and pleural effusion 625(40%), ascites 530(34%), cerebrospinal fluid 420(26%) in 2017.

RESULTS

Atypical cells finding rates were 17%(212/1218) and 13%(206/1575). In 2017, enhancing staff's competency and consistency though education and case discussion. The positive predictive value of abnormal cells finding rate compared to cytology test increased from 71% in 2016 to 79% in 2017.

CONCLUSIONS

In clinically, body fluid analysis may also send to cytology, but having no significant finding because sampling error. Improving the medical examination that can increase the abnormal cells finding rate.

ID: 15060 PIN: 215

THE SEROLOGIC VARIABILITY OF CD4 COUNT AND STANDARD HIV TEST RESULTS IN THE WHO HIV CLINICAL STAGING OF FILIPINOS LIVING WITH HIV (FLHIV) IN A SOCIAL HYGIENE CLINIC, QUEZON CITY, PHILIPPINES

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BACKGROUND-AIM

Human Immunodeficiency Virus is the causative agent of HIV infection and Acquired Immunodeficiency Syndrome (AIDS) with a significant decline of the CD4 T-cells in a patient. (Hughson, 2017) The study aims to evaluate the serologic variability of CD4 count and the standard diagnostic HIV test results (ELFA, CIA, and Western Blot) as an aid in the WHO HIV clinical staging of Filipinos living with HIV (FLHIV).

METHODS

The research was composed of Phase 1, which was before Antiretroviral Therapy (ART); and Phase 2, which was six months after the initiation of ART. There were two screening tests commonly performed in the country, namely Chemiluminescent Immunoassay and Enzyme-Linked Fluorescent Assay that served as the initial testing for phase 1. A confirmatory testing, Western Blot, followed when a blood specimen was reactive during the initial testing. CD4 was utilized because it is the strongest predictor of HIV progression. For monitoring purposes, CD4 count was repeated after 6 months in patients undergoing ART. FLHIV patients were distributed based on their WHO clinical stage, taking into account the presence or absence of the signs and symptoms from each stage that are most commonly seen in the social hygiene clinic in the Philippines. Filipinos who do not have the disease will serve as control.

RESULTS

Results showed that the mean CD4 count of patients with WHO Clinical stages 1 and 2 did not differ at baseline ($p=0.643$), while those at WHO Clinical stage 3 has significantly the less mean CD4 count ($p=0.021$) and those at clinical stage 4 has the least ($p=0.001$). The ART was evidently effective after six months, in significantly increasing ($p<0.05$) the mean CD4 count of patients with WHO Clinical stages 3 and 4. Patients with WHO Clinical stages 1, 2 and 3 did not differ in their mean CD4 count after six months ($p=0.351$), while those with WHO Clinical stage 4 remained to be the least ($p<0.05$). Further, incidence of upper RTI ($p=0.014$) and active PTB ($p<0.001$) significantly reduced among patients with WHO Clinical stages 2 and 4, respectively, after six months of taking ART.

CONCLUSIONS

CD4 count is still a significant indicator of immune status in monitoring Filipinos Living with HIV and their efficacy with ART after six months.

ID: 15074 PIN: 216

THE CYTOTOXIC EFFECT OF PLEUROSTYLIA CAPENSIS TURCZ (LOES)

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BACKGROUND-AIM

Bone fractures non-unions and delayed unions remain a persistent orthopaedic challenge. The current treatments have proven to have constraints due to numerous adverse side effects. Traditional medicinal plants have a reputable outcome in the treatment of many diseases. Pleurostylia capensis Turcz (Loes) is a rich source of bioactive metabolites known to be anti-viral, antibacterial, antiparasitic and antineoplastic. It is utilised to treat arthritis, fractures, epilepsy and other diseases for centuries. It is a rich source of bioactive metabolites.
Objectives: To evaluate the cytotoxic activities of leaves and bark extracts Pleurostylia capensis against mouse skeletal (C2C12) cells invitro using the 3-(4,5-Dimethylthiazol-2-Yl)-2,5- diphenyltetrazolium bromide (MTT) assay.

METHODS

C2C12 cells were cultured as monolayers in medium supplemented with 10 % foetal bovine serum, and antibiotic cocktail. Subsequently, the cells were treated with the aqueous bark and root extracts of P. capensis at different concentrations.The MTT CellTiter 96® non-radioactive cell proliferation assay was conducted at day 2, 4, and 8 post- incubation.

RESULTS

The MTT assay results showed that P. capensis significantly increased the viability of the cells. The plant crude extracts enhanced cell proliferation and the percentage of viability with the highest peaks at Day 4, specifically on the positive control and concentrations 30 µg/ml and 50 µg/ml.

CONCLUSIONS

The results obtained revealed significant proliferation, overall metabolic activity, division, turnover and viability of cells. These findings warrant further studies to isolate novel compounds which will serve to inform future scientific research towards the development of safe drug formulations for bone fracture repair.

ID: 15077 PIN: 217

ENDOCRINE DISORDERS ASSOCIATED WITH ERECTILE DYSFUNCTION IN NIGERIA

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BACKGROUND-AIM

Most Nigerians who suffer from erectile dysfunction (ED) do so in silence without seeking medical help or advice. Of the multiple aetiologies, endocrine disorders seem the commonest of the organic causes. This study aims to assess the association of endocrine disorders with erectile dysfunction.

METHODS

This study involved 25 patients clinically diagnosed with erectile dysfunction referred to the endocrinology unit of the Chemical Pathology Laboratory with no history of diabetes, hypertension, smoking or alcohol use and 10 apparently healthy subjects with normal erectile function. Blood samples were collected between 8:00 and 10:00am and analysed for serum Total testosterone (TT), Prolactin (PRL), Follicle stimulating hormone (FSH) and Luteinizing hormone (LH) using competitive enzyme linked immunosorbent assay.

RESULTS

The result showed significant difference (mean ± SEM) between subjects with ED and controls in LH (5.7 ± 0.6) vs. (3.6 ± 0.6) [p = 0.032], PRL (20.5 ± 4.0) vs. (8.9 ± 1.1) [p = 0.010] and testosterone (4.9 ± 0.3) vs. (7.6 ± 1.0) (p = 0.030). LH/FSH, LH/TT and PRL/TT ratios were significantly higher in ED subjects compared with controls p= 0.008, 0.001 and 0.013 respectively, while FSH/PRL ratio was significantly lower (p =0.045)

Mean serum testosterone was significantly higher (p = 0.048) in ED subjects <40years (5.5 ± 0.4 ng/ml) compared with subjects >40years (4.2 ± 0.4 ng/ml). Of the subjects with ED tested for serum Prolactin, 45.5% had normal serum prolactin levels (9.6 ± 0.84 ng/ml) while 54.5% had hyperprolactinaemia (29.5 ± 6.3 ng/ml) out of which 1 (8.3%) had low serum testosterone.

Furthermore, there was statistically significant positive correlation between age and FSH (r = 0.578, p = 0.005) and a significant negative correlation between age and testosterone (r = -0.541, p = 0.009) but there was no significant correlation between LH and FSH in subjects with ED.

CONCLUSIONS

Endocrine disorders associated with ED in this study were found to be low testosterone and hyperprolactinaemia and investigating both routinely in patients with ED is recommended. Finally, the finding suggests hypergonadotrophic hypogonadism in erectile dysfunction patients and also that ED could be age related.

ID: 15078 PIN: 218

LIPID PEROXIDATION AND TOTAL ANTIOXIDANT RATIO IN POOR GLYCAEMIC CONTROL TYPE 2 DIABETES PATIENTS IN IBADAN, NIGERIA.

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BACKGROUND-AIM

There is mounting evidences that the inability to maintain good glycaemic control will induce free radical leading to oxidative stress which has been implicated in the progression of long-term diabetes complications. This study therefore assessed malondialdehyde, and total antioxidant status (pro-oxidant/antioxidant balance) in patients with type 2 diabetes mellitus (T2DM) with different glycaemic status.

METHODS

A total of 70 participants were recruited in this study which included fifty (50) patients already diagnosed with type 2 diabetes mellitus out of which 25 has poor glycaemic control and 25 had good glycaemic control. Glycated hemoglobin levels were used to classify glycaemic status. Twenty (20) apparently healthy non-diabetic individuals served as control subjects.
All subjects were evaluated for fasting blood sugar (FBS), glycated haemoglobin (HbA1c), lipid profile, malondialdehyde (MDA), superoxide dismutase (SOD) and total antioxidant status (TAS) status using standard methods.

RESULTS

The result showed no significant difference in MDA and lipid profile while TAS/MDA ratio and SOD were significantly lower ($p = 0.000$) in patients with poor glycaemic control than good glycaemic control. There was strong negative correlation between TAS/MDA and HbA1c ($r = -0.415$) in patients with poor glycaemic control with no correlation in the other two groups.

CONCLUSIONS

Ratio of TAS and MDA will be a better prognostic index of oxidative stress in diabetic patients with poor glycaemic control. Poor glycaemic status of T2DM patients is a determining factor in the complications observed in the patients.

ID: 15098 PIN: 219

CAN THE INTRODUCTION OF PROCALSITONIN AND PROCALSITONIN-ALGORITHM CONTRIBUTE TO A MORE STANDARDIZED TREATMENT REGIMEN IN PATIENTS WITH LOWER RESPIRATORY TRACT INFECTIONS?

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BACKGROUND-AIM

The retrospective observational study is based on several internationally published studies conserning procalsitonin (PCT) -guided antibiotic treatment of Community-Acquired Pneumonia (CAP)-patients. Diakonhjemmet hospital As wanted to introduce PCT as a diagnostic marker to guide antibiotic treatment of pasients with this disease. The aim of the study is to establish a more standardized antibiotic treatment and with that achieve reduced use of antibiotics

METHODS

The study is based on replies from medical doctors at the division og pulmonary medicine of ehether PCT had any influence on their decision regarding antibiotic treatment

RESULTS

The results show that PCT alone, without additional parameters such as CRP and clinical evaluation, is not enough to decide whether or not to discontinue the antibiotic treatment. The mediscal doctors changed their decisions based on PCT-values in 8,6 % of the patients.

CONCLUSIONS

It is reasonable to believe that with more experience and knowledge conserning PCT-guided antibiotic treatment, it will be benficial to introduce this parameter, and that the PCT algorithm can eventually lead to more targeted treatment of patients with CAP

ID: 15137 PIN: 22

PRE-ANALYTICAL PROCESS IMPROVEMENT FOR PATIENT WITH ABNORMAL HYPERNATREMIA BY ROOT CAUSE ANALYSIS

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BACKGROUND-AIM

Central pontine myelinolysis(CPM) is due to irreversible brain damage caused by overly rapid correction of hyponatremia using 3%NaCl. In 1949, Dr. Adams observed a sudden onset of quadriplegia, mutism, dysphagia, and abnormal Babinski sign in patients during hospitalization.A 74-years-old man with chronic renal failure to the ER due to fever. Biochemistry results: Na: 126 mEq/L, the next morning showed Na:159mEq/L, and according to The Massachusetts General Hospital Handbook of Internal Medicine 5/e: a rate of sodium replacement of 6~8mEq/24hurs. This was an abnormal report. Group root cause analysis (RCA) was organized to use method RCA to identify the root cause and effectively correct the missteps before specimen analysis.

METHODS

RCA steps:1.Event investigation: Time series and event using matrix diagram to reproduce the complete process 2.Proximate cause analysis: A fishbone diagram was used for a detailed listing of the factors.3.Confirm root causes:(1)Nurses did not collect blood samples according to SOP.(2)Regarding ward nurses, the evening shift staff preparing tubes and labels, and the night shift staff performs blood collection in the morning, lead to the error of drawing from the wrong patient .D. Improvement activities :PDCA was used to perform improvement activities on the two root causes.

RESULTS

Effects of program implementation:1. Accuracy: The accuracy of staff checks reached 100%, and mislabeled blood collections was reduced to 0 case.2.Timeliness: The time spent processing mistaken specimens before specimen analysis was reduced. The achievement rate of issuing reports 40 minutes after tests was 95.8% for biochemical tests and 99.8% for CBC; both figures met the threshold .

CONCLUSIONS

Medical technologists became aware that reports with overly rapid correction could not be possible, and the use of 3% NaCl saline is currently controlled in hospitals to prevent permanent causing damage to patients. The foundation behind medical technologists' discovering of abnormal reports derives from continual education and training. Making use of quality control tools RCA can systematically and effectively identify the root causes, restore the reality, and perform improvements. Continuous improvements can cause each stage before and after specimen analysis to be more concise and accurate.

ID: 15104 PIN: 220

A MODIFIED DITHIOTHREITOL PROTOCOL FOR ELIMINATING DARATUMUMAB INTERFERENCE

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BACKGROUND-AIM

Daratumumab (DARA), a monoclonal antibody, used to treat patients with Multiple Myeloma causes interference in serological antibody testing prior to blood transfusion. Treating reagent red blood cells (RBCs) with dithiothreitol (DTT) eliminates interference. However, a disadvantage is the time-consuming procedure and the hemolysis observed during long-term storage of DTT-treated reagent RBCs.
To overcome this challenge, we have developed a modification of the DTT treatment described in AABB´s technical manual that ensures stability of reagent RBCs for 33 days. A long-term storage of DTT-treated reagent RBCs will improve laboratory efficiency and reduce turnaround time for antibody detection.
The aim of this study was to validate the modified protocol for DTT treatment, and to measure the reduced time spent on detection of alloantibodies.

METHODS

DTT treatment of reagent RBCs was performed, with DTT supplied by Sigma Aldrich, according to AABB´s technical manual except for a RBC:DTT ratio of 30:25 (vol:vol). Multiple batches of DTT-treated reagent RBCs were distributed to three transfusion services in The Capital Region and Region Zealand of Denmark. Antibody screening tests were performed with untreated and DTT-treated reagent RBCs on plasma samples from DARA-treated patients (n=50) and on plasma samples (n=60) from patients with known alloantibodies (n=70). Antibody screening tests were performed using Column Agglutination Technology (BioRad Laboratories).
Analysis time was compared using both immediately and in advance prepared DTT-treated reagent RBCs.

RESULTS

DARA interference was eliminated in all 50 samples from DARA-treated patients. 55 of 70 alloantibodies were detected and the remaining 15 alloantibodies within the Kell system were negative.

CONCLUSIONS

Validation results show, that the modified protocol for DTT-treatment eliminates DARA interference and detects alloantibodies examined except for alloantibodies within the Kell system.
DTT-treated reagent RBCs, prepared in advance, reduce antibody detection time by 53 minutes.
The study shows that a central preparation of DTT-treated reagent RBCs and distribution to transfusion services ensures quality, improves laboratory efficiency and therefore prevents delayed blood transfusions.

ID: 15125 PIN: 221

DUDLEYA BRITTONII EXTRACTS REDUCED THE INFLAMMATION OF DIGESTIVE-RELATED DISEASE IN ANIMAL MODELS

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BACKGROUND-AIM

Dudleya brittonii is a succulent plant in the Crassulacease family. It is native to Baja California and Mexico. The leaves of it grow in a basal rosette and are covered with a dusty, chalky, mealy white epicuticular “wax”. The wax has the highest measured ultraviolet reflectivity of any plant. Its potential as a natural extract for medicine, functional food and cosmetic still remains except cancer and anti-oxidant. In the present study we have investigated its role on anti-inflammation in digestive-related animal disease models.

METHODS

We divided the animals group as following: (1) vehicle control, (2) disease control, (3) 10-3 Dudleya brittonii extracts, (4) 10-3 Dudleya brittonii extracts, (5) positive drug control (gastritis model only). To make gastritis model, indomethacin was given at 30 minutes after Dudleya brittonii extracts administration. 25 mg/kg indomethacin was given to all rats (n=10) by oral gavage in 3% sodium bicarbonate. Seven hours after, the entire rats were sacrificed and confirmed gastrointestinal erosions and ulcers, and then verified further using histological analysis. To make colitis model, 6-8 weeks mice (n=10) was given 2% DSS in distilled water ad-libitum during 7days following replaced regular drinking water for 1day. Mice were daily checked the body weight, bleeding and diarrhea for DAI index. At the autopsy, the rectum was photographed, measured the length and then further progressed the Swiss roll for histological analysis.

RESULTS

Dudleya brittonii extracts decreased the score of gastric damage in gastritis disease model ($P<0.05$) as well as reduced the colon length shortening in colitis animal model ($P<0.05$) as a dose dependent manner. It is confirmed on histological index data with H&E staining with gut and colon mucosal damage as well as DAI index in colitis model. And also, the entire tissue section of each group treated the extracts showed decreasing the expression of inflammation markers such as COX2, TNF-a and iNOS.

CONCLUSIONS

Our data suggests that Dudleya brittonii extracts functions the decreasing effect on the inflammation of digestive-related disease such as gastritis and colitis.

ID: 15140 PIN: 222

FIND OUT HIDDEN DISEASES BY ABNORMAL CBC DATA AND PICTURES

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BACKGROUND-AIM

During reporting the results of CBC-DC, those against approved rules of the experts system would be intercepted and should be reviewed by experienced medical technicians. There is much important information in the raw data, like machine alerts and volume distributions of WBC, RBC and platelet et al, which might be useful for abnormal results interpretation but could be overlooked usually.

METHODS

A 40 y/o female with tentative diagnosis of essential thrombocytosis and thalassemia major since childhood visited our OPD due to routine physical examination of her company. She also received splenectomy and platelet inhibitors.
In this study, we use the picture and alerts of CBC-DC results, combined with blood smear morphology, to find out the possible hidden underlying diseases.

RESULTS

There is incompatible between the laboratory results (Hb: 9.0 g/dl, MCV: 105.1 fl and platelet number up to 3131*103/ul) and these tentative diagnosis. The alerts from the instrument against approved auto-release rules. The results of CBC showed MCH and MCHC beyond the analytical limits and the platelet number more than normal.
Patient's RBC graph, which showed wider distributions and overlapping between RBC and platelets, and there was significant uneven distribution of the size of platelet.
Re-analysis of the sample after dilution and blood smear interpretation were suggested. In the peripheral blood smear, fragmented RBC was treated as platelet, which leads to abnormal platelet numbers. Blood smear stained by Wright-Giemsa stain showed fragmented RBC which was responsible for false significant elevation of platelet numbers. The final result of platelet number was reported by manual method.

CONCLUSIONS

The final diagnosis of this patient is congenital dyserythropoietic anemia type II, by exome-sequencing variant data analysis. According to this case report, alerts from instruments should not be overlooked and further review of relevant raw data or graph could help us to report more precise laboratory results.

ID: 15153 PIN: 223

HOMA: RESISTANCE TO INSULIN IN HEALTHY INDIVIDUALS

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BACKGROUND-AIM

Glucose homeostasis remains within normal parameters thanks to the close and permanent intercommunication between the insulin-sensitive tissues (muscle, liver and adipose tissue) and the beta cell. The diminution of the ability of insulin to exert its biological actions is what has been called Insulin Resistance. The HOMA (Homeostasis Model Asseessment) method is a procedure for the indirect calculation of Insulin Resistance.
The aim is to relate the HOMA, as a measure of Insulin Resistance, with the body mass index, with different anthropometric measures and with the percentages of fat and lean mass in healthy, young and non-obese individuals.

METHODS

We selected 44 healthy individuals, 29 men and 15 women with an age range of 20-59 years. To all of them, glucose levels were determined in blood, weight, height, anthropometric measurements were taken and a bioimpedance was made for the calculation of lean and fat mass. The results were analyzed by multiple Pearson correlation.

RESULTS

Glucose levels only contributed to the insulin response in 60% of cases ($r = 0.58$, $p < 0.001$), while insulin resistance is closely correlated ($r = 0.97$, $p < 0.001$) with circulating levels of insulin.
No correlations were observed between insulin levels, glucose levels or insulin resistance (HOMA) with any of the anthropometric measures or percentages of fat or lean body mass.

CONCLUSIONS

This lack of correlation in young and healthy people is different from that observed in individuals with metabolic and / or endocrine pathology (obesity, diabetes, polycystic ovary) where insulin resistance is favored by the increase in fat tissue.

ID: 15175 PIN: 224

DIABETES MELLITUS TREATMENT, EFFECTS AND CONSEQUENCES

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BACKGROUND-AIM

Elevated lactate concentration in circulation might have different origin due to it's connection to tissue and organs functioning on very subtle way. Following glucose metabolite pathways, regulation of glucose level at the patients with Diabetes Mellitus type 2 with metformin, as a correspondent between liver and pancreas glucose metabolism and release, has to be well controlled.
This was one of the aims in our follow up study. Namely, we investigate group of patients (N 50) with DM type 2 treated with metformin for a few months. We perform measurement of few parameters that take part as substrate or product in glucose metabolism, but the main accent of this study was at lactate level so that negative effect can be noticed and corrected.

METHODS

Level of glucose, cholesterol, LDL cholesterol as hepatic enzyme activity was measured spectrophotometry on the start and after 1 month treatment. Glucose and lactate concentration was measured in period of few months. Obtained results were submitted to statistical ANOVA model.

RESULTS

According to statistical analysis this medicament cause moderate changes in glucose, urea level and enzyme activity. Hepatic enzymes show that this drug doesn't cause hepato-toxic effect in a short time glucose regulation. Although we found that cholesterol and LDL level was lightly increased, it doesn't show statistical significant differences. Additionally, we did found increase lactate blood concentration in a very first month of treatment, previously considered as mild to moderate acidosis(4.25 mmol/L) without additional elevation in lactate concentration despite regulation of the glucose level. Even more, at fourth month we found decreased lactate concentration in circulation also confirmed with normal hepatic enzyme activity.

CONCLUSIONS

Estimated results shows that in few month measurements, glucose level can be good regulated with metformin avoiding acidosis and side effect. Maintaining of relatively normal lactate level also shows that glucose metabolism and its release is well control and indicates that additional side mechanisms are not activated in the regulation of the same process. In support of the results, we can confirm that lactate level and enzyme activity can be together or separately considered as good marker for drug effect during the therapy.

ID: 15181 PIN: 225

PREVALENCE OF GESTATIONAL DIABETES MELLITUS AND ITS ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CLINIC

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BACKGROUND-AIM

Diabetes is an important public health problem and is one of the four priority non communicable diseases targeted for action by world leaders. Globally the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. The global prevalence of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in adult population in 2014(WHO, 2016). Diabetes of all types can result in complication of many body parts and can increase the overall risk of dying prematurely. In pregnancy, poorly controlled diabetes increases the risk of fetal death and other complications (WHO, 2016). Gestational diabetes mellitus (GDM) is a condition in which women without previous diagnosed diabetes exhibit high blood glucose levels during pregnancy especially during the third trimester (Moore, 2005). The prevalence of Gestational diabetes Mellitus (GDM) was unknown among women attending antenatal care in Kinoni health Centre IV. The aim of this study was to establish this prevalence since a study conducted in Mulago Hospital, Uganda and showed that GDM exists in Uganda.

METHODS

The study design was cross-sectional. Pregnant women not known to have pre-existing glucose intolerance aged between 15-55 years attending antenatal clinic at Kinoni Health Centre IV consented for the study. Screening test involved performing a random blood sugar test. Clients with blood glucose levels >130mg/dl (7.2mmol/l) were considered positive cases and therefore qualified FOR GDM diagnosis which was performed in the morning after 8-14 hours of fasting from the previous meal.

RESULTS

The study result showed a prevalence of GDM 4.3%, those at risk were 8.5%, and 87.2% were non diabetic. The highest prevalence was among women aged 31 to 35 years having a percentage of 28.3% followed by 21 to 25 years at 2.7% and 26 to 30 years at 3.3% while other age groups had no prevalence. The second trimester had the highest prevalence of 6.1% of GDM, followed by those in the third trimester with a prevalence of 4.1% while the first trimester had no prevalence.

CONCLUSIONS

GDM exists and is a threat making it a concern at Kinoni health center IV. Also women in age group 21 to 30 years and second trimester are at higher risk of developing GDM.

ID: 15187 PIN: 226

CLINICAL CHEMISTRY REFERENCE INTERVALS OF HEALTHY ADULT POPULATIONS IN GOJJAM ZONES OF AMHARA NATIONAL REGIONAL STATE, NORTHWEST ETHIOPIA

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BACKGROUND-AIM

Reference interval is crucial for disease screening, diagnosis, monitoring, progression and treatment efficacy. Due to lack of locally derived reference values for the parameters, clinicians use reference intervals derived from western population.This study aimed to determine the reference intervals of common clinical chemistry parameters of the community of Gojjam Zones, Northwest Ethiopia.

METHODS

Population based cross-sectional study was conducted from November 2015 to December 2016 in healthy adult populations of Gojjam zone. Data was collected using structured questionnaire and Clinical chemistry parameters were measured using Mindray BS 200 clinical chemistry autoanalyzer as per the manufacturer's instructions. Descriptive statistics was used to calculate mean, median and 95 percentiles.Independent sample T-test and one way ANOVA were used to see association between variables.

RESULTS

After careful screening of a total of 799 apparently healthy adults who were consented for this study, complete data from 446 (224 females and 222 males) were included for the analysis.
The mean age of both the study participants was 28.8 years. Males had high ($P<0.05$) mean and 2.5th-97.5thpercentile ranges of ALT, AST, ALP, creatinine and direct bilirubin.
The reference intervals of amylase, LDH, total protein and total bilirubin were not significantly different between the two sex groups ($P>0.05$). Mean, median, 95% percentile values of AST, ALP, amylase, LDH, creatinine, total protein, total bilirubin, and direct bilirubin across all age groups of participants were similar ($P>0.05$). Bu there was a significant difference in the value of ALT ($P<0.05$). The reference intervals of ALT, total protein and creatinine were significantly ($P<0.05$) high in people having monthly income >1500 ETB compared to those with low monthly income. Significant ($P<0.05$) higher values of the ALT,ALP and total protein were observed in people living in high land compared to low land residences.

CONCLUSIONS

The study showed that the common clinical chemistry parameters reference intervals of healthy adults in Gojjam zones were higher than the reference intervals generated from developed countries.There was variation of reference interval values based on climate, gender, age, monthly income and geographical locations.

ID: 15200 PIN: 227

EFFECTS OF HYDROGEN-RICH WATER ON THE LEVELS OF GH, IGF-1, HSCRP, AND MDA-LDL IN HEALTHY PEOPLE

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BACKGROUND-AIM

Molecular hydrogen is the smallest element in the universe, and its tiny size allows it to quickly permeate and penetrate all of the body's cells and tissues. Molecular hydrogen is a powerful antioxidant that helps to defend cells and genes from damage and death caused by harmful free radicals. Therapeutic effects of molecular hydrogen for a wide range of disease models and human diseases (predominantly oxidative stress mediated and inflammatory diseases) have been reported. Hydrogen-rich water is also known to stimulate ghrerin secretion from the stomach, and ghrein is known to stimulate growth hormone (GH) secretion. However, little is known the effects of molecular hydrogen in healthy people. The purpose of this study was to assess the anti-inflammatory, anti-oxidative, and GH secretion stimulation effect of hydrogen-rich water in healthy people.

METHODS

We recruited 34 volunteers (25 women and 9 men, aged 25 to 60 years). The participants were randomized into either the hydrogen-rich water (intervention) group or placebo water (control) group. They drank 300 mL of the relevant water 3 times a day for 8 weeks. A 9 mL blood sample was obtained at 5 PM from each participant at 0 (baseline), 4, and 8 weeks, after the start of the intervention. The levels of hsCRP and Malondialdehyde-modified low-density lipoprotein (MDA-LDL) were measured to evaluate the anti-inflammatory and anti-oxidative effects. GH and insulin-like growth factor-1(IGF-1) levels were measured to evaluate GH secretion stimulation.

RESULTS

Both hydrogen-rich water and placebo water decreased MDA-LDL levels by 23-26% and IGF-1 levels by 16-24% at 8 weeks and had no effect on hsCRP and GH levels. However, there were no significant differences in the effects between the 2 groups in this study.

CONCLUSIONS

Although this trial could not demonstrate a difference in the effects between hydrogen-rich water and placebo water on healthy individuals, our results do suggest that water consumption itself might have beneficial effects on our health.

ID: 15217 PIN: 228

THE INFLUENCE OF TRAINING OUTCOME AND COMPETENCY ON EFFECTIVE UTILIZATION OF MALARIA MICROSCOPY RESULT BY HEALTH PROFESSIONALS IN SOUTH EASTERN NIGERIA

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BACKGROUND-AIM

Utilization of malaria result by Health care providers in Nigeria has faced challenges due to lack of confidence in the diagnostic test results. This study demonstrates the influence of in-service training on malaria microscopy among medical laboratory scientists on the utilization of malaria microscopy results in selected Government Health Facilities in Nigeria

METHODS

Base line and follow up studies were conducted in 2014 and 2017 respectively with pre tested questionnaire on perception of Health care providers in selected secondary health facilities on malaria diagnostic results. Medical laboratory scientists working in the selected facilities were trained in Basic malaria microscopy in accordance with the World Health Organization (WHO) basic microscopy training manual.

RESULTS

The study demonstrates a significant improvement in the mean written pre-and post-tests scores from 28.4% (95% CI 30.4–30.4%) to 75.2% (95% CI 73.6–78.2%) ($P < 0.001$). The mean counting post-test score improved significantly from 2.1% (95% CI 1.9–3.7%) to 28.4% (95% CI 26.2–32.5%) ($p < 0.001$). There was significant improvement in MBF slide reading comparing the Mean pre and post-test score. ($p = 0.002$). Participants mean sensitivity during the pre and post test were significant from 60.2% (95% CI 58.4–65.4%) to 88.2% (95% CI 82.6–93.2%) ($p < 0.001$) while the specificity was not significant. Comparing the baseline and follow up study, there was significant difference when comparing the rate of utilization of malaria result from the Trained Med Lab Scientists. ($p < 0.001$).

CONCLUSIONS

The increase in utilization of malaria microscopy result for effective case management of malaria in the study area was influenced by training outcome and competency of medical laboratory scientists.

ID: 15226 PIN: 229

TWO CASES OF CRYOGLOBULIN-POSITIVE WALDENSTROM'S MACROGLOBULINEMIA:CASE REPORT

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BACKGROUND-AIM

Cryoglobulins,in three main types,are a group of immunoglobulins that undergo reversible precipitation at low temperatures;often associated with multiple myeloma(MM).The study was to investigate two rare cases of cryoglobulin-positive Waldenstrom's macroglobulinemia(WM),exhibiting similar laboratory findings,yet developing different outcomes.We hope to set up a protocol via multidisciplinary communication to to assist patients' diagnosis and earlier treatment.

METHODS

Case A and B represent were females at age 74 and 58 respectively.Both of them having symptoms of vasculitis and Raynaud syndrome,visited our hospital on Feb.23, vs Oct.31, 2016.The doctor ordered cryoglobulin test according to clinical presentations for further definite diagnosis.

RESULTS

Case A and B were diagnosed as WM based on similar laboratory results as following(1)anemia (Hb 7.8 vs 10.9g/dL)(2)decreased complements(C3 43.1 vs 45.4mg/dL;C4 0.1 vs 1.5mg/dL)(3)both ANA-negative, Anti-HCV-negative(4)both cryoglobulin-positive(5)monoclonal gammopathy in SPE,preliminarily suspected MM(6) IgM and kappa light chain restriction by IFE(7)CD19+, CD20+, CD5-,丨+, 乚- and lymphoplasmacytic infiltrate expressed in immunophenotyping by bone marrow biopsy(8)elevated IgM (3590 vs 1620mg/dL) (9) no bone abnormality found in CT scan.WM,not MM was confirmed as mentioned above.The differences between two cases were as below: (1) As a consequence of serum hyperviscosity caused by high level of IgM in Case A,it's hard to make a blood smear and centrifuge blood sample.Only after sample pre-warmed at 37°C for 30 min, separation of serum could be done.(2)There is variance of clinical response. The treatment of Case A is chemotherapy combined with target agent of CD20 monoclonal antibody; however, single oral chemotherapy for Case B, could be effective.Though IgM level decreased by 93 % and 61 % respectively,Case A died of HBV infectious complication;Case B was still under treatment monitoring.

CONCLUSIONS

Adverse prognosis may arise from hyperviscosity and age factor. Since WM is incurable and remains challenging to manage especially in patients with cryoglobulinemia,which might bring about interference of examination.Once cryoglobulin-positive,medical technologists should have a discussion with hematology-oncologists. Besides, blood specimen should be pre-warmed at 37°C before any tests. In-time diagnosis and better quality of healthcare could be achieved with team work.

ID: 15145 PIN: 23

INTRODUCTION OF RESERVATION SYSTEM FOR BLOOD COLLECTION TO IMPROVE CUSTOMER SATISFACTION

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BACKGROUND-AIM

In blood collection unit of the department of laboratory medicine, the intensive visiting for blood sampling on specific time period cause the delay for waiting time, which become an aggravating factor for service quality. We tried reform to improve customer satisfaction by introduction of blood collection reservation system and establishing night time blood sampling process in order to reduce waiting time of blood sampling and to provide for convenience to office workers who have difficulty using regular business hours.

METHODS

We checked customers' requirements through a survey, and developed a blood collection reservation system for patients to select their desired blood sampling time in the morning, in the afternoon and at night. We divided blood sampling time into morning, afternoon and night with computer system along with appointments, and established a blood collection master on examination lists that are not available with afternoon and night blood sampling. Regarding the lists that are available in both morning and afternoon blood sampling, the afternoon one has priority relieving the morning concentration. Regarding night blood sampling, the number of patients per day is limited. The medical guideline and SMS were revised to contain information to accommodate morning, afternoon and night blood sampling.

RESULTS

Before the system was adopted, the subject patients for sampling were about 70% in morning but it was down to 60% after the introduction of the system, and average 20 patients per day do at night. As a result of the reduction in the number of individuals seeking to have their blood drawn in the morning, complaints from patients also decreased. The analysis on the waiting time for blood sampling shows that before the system as adopted, the rate of waiting over 10 minutes was around 35%, but after the adoption of the system, it is only 20%. Patients can now schedule their laboratory appointment based on their own schedule.

CONCLUSIONS

Laboratory services should be rapid, accurate, and convenient for patients. Optimization of extant blood collection reservation system require constant efforts to improve the computation system, enhance the education provided to staff in related departments, develop patient-oriented services, and increase the overall quality of medical services.

ID: 15234 PIN: 230

AN INTEGRATED MEDICAL CARE TO ENHANCE THE EFFECTIVENESS OF CLINICAL DIAGNOSIS AND TREATMENT OF GROUP A STREPTOCOCCUS PHARYNGITIS IN CHILDREN

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BACKGROUND-AIM

In order to promote early diagnosis and early treatment, it is usually recommended to do different specialty consultation, together with laboratory tests for the best diagnosis and treatment. As advances in laboratory items and laboratory technology development, clinical medical technologists involved in the physician-based medical team will help patients more effective on the diagnosis based on laboratory tests. To enhance the effectiveness of clinical diagnosis and treatment for Group A streptococcus pharyngitis in children.In this study, we set up an integrated medical team, and reported the better outcome of this novel integrated care.

METHODS

In Show Chwan Memorial Hospital, we set up an integrated medical team including clinical medical technologists for diagnosis of Group A streptococcus pharyngitis in children in January 2015. We then did comparisons rapid antigen detection test and throat cultures, and the benefits to patients after 2 years of the program.

RESULTS

A total of 121 hospital patients were suspected to have Group A streptococcus pharyngitis in children between 2015 and 2017. Based on rapid antigen detection test and throat cultures, the sensitivity were 87.9% and 94.5%.The specificity was 93.7%, likelihood ratio positive was 18.6, and likelihood ratio negative was 0.15 on rapid antigen detection test. Due to the use of rapid antigen detection test for early diagnosis of Group A streptococcus pharyngitis in children is better than the throat cultures, the integrated care did reduce expenditures approximately $ 7,000.

CONCLUSIONS

Although Taiwan has a good health care system, a doctor still frequently delayed to diagnose Group A streptococcus pharyngitis in children based on throat cultures. Compared with throat culture, rapid antigen detection tests (RADTs) offer diagnosis at the point of care (within five to 10 minutes).Early diagnosis and treatment are recommended to prevent suppurative and nonsuppurative postinfectious sequelae .In this case, active participation of CMTs may promote the integrated care, reduce the burden of patients, Improving the utilization rate of inspection items ,and enhance appropriate early treatment. The novel integrated medical care of Group A streptococcus pharyngitis in children diagnosis and treatment could be also extended to modeling of other diseases.

ID: 15266 PIN: 231

MANAGING ACUTE ISCHEMIC STROKE: EVALUATION OF NEW STRATEGIES FOR CRITICAL VALUES NOTIFICATION AND TURNAROUND TIME OF COAGULATION

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BACKGROUND-AIM

Cerebrovascular disorder is the major cause of death and disability in the global population. Critical value notification is an urgent phase of the clinical laboratory testing process and the rescue time plays an important role in stroke. Prothrombin time (PT) and activated partial thromboplastin time (aPTT) tests report must be completed within 20 minutes for acute ischemic stroke. This study is to evaluate the different centrifugation time and speed to shorten turnaround time (TAT) and describe a computerized communication system conducive to improving the quality of 5-year period of critical value reporting.

METHODS

According to CLSI H21-A4 guidelines to change centrifugation time and speed and collect ten samples with low, medium and high numbers of platelets respectively to test in Kubota centrifuge (Japan). We divided into three groups that 1500g ,15 minutes (group A), 2330g, 8 minutes (group B) and 2330g, 5 minutes (group C), respectively. Evaluate differences in test results and confirm residual platelet count less than $10X10^3$/ ㎕. Furthermore, the clinical laboratories undertake assessments and appropriate measures to improve the timeliness of critical value reporting of stroke. The double-track notification to ensure that physicians promptly aware and perform. We report audit results at medical meetings periodically.

RESULTS

The residual platelet count in group B was less than $10X10^3$ / ㎕, the correlation coefficient of PT was r=0.9931 (p=0.84), the correlation coefficient of aPTT was r= 0.9748 (p=0.88). The results showed no significant difference. After modifying the SOP, the completion rate of PT and aPTT increased from 68% to 92% and from 67% to 93% in 20 minutes, respectively. The achievement and follow-up rates of critical values notification from 2013 to 2017 were 97.61%, 97.88%, 98.03%, 98.42%, 99.0%, respectively, and 97.31%, 98.48%, 99.0%, 99.49%, 100% in turn.

CONCLUSIONS

This study confirmed that the centrifuge speed was set at 2330g for 8 minutes that a reliable and useful option for minimizing TAT for PT and aPTT tests to enhance the care quality of acute ischemic stroke. Automated communication improves the timeliness of notification of stroke and avoids the potential errors for which accreditation programs require read-back of the result.

ID: 15250 PIN: 232

PLASMA FREE FATTY ACID AND RANDOM URINARY PROTEIN RATIO AS A PREDICTOR AND PROGNOSTIC INDEX FOR PRE-ECLAMPSIA IN IFE,NIGERIA.

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BACKGROUND-AIM

Mother and child health is one of the cardinal goal in MDGs. Pregnancy induce hypertension has been one of the factor limiting the goal in developing countries. Gynaecologists are still oscillating on a specific marker for predicting occurrence or its pathogenesis.

METHODS

Twenty hypertensive pregnant women and twenty normotensive pregnant women attending anti-natal clinic and admitted to labour and post-natal ward of teaching hospital were involved in this study. Plasma free fatty acid (FFA) and random urinary protein(RUP) levels were analysed. Their blood pressure before and after delivery were measured at the clinic and ward.

RESULTS

The mean FFA in hypertensive pregnant women and normal in various stages are ;second trimester 2.7±0.2 and 2.3±0.3mmol/l, P<0.02;third trimester 2.7±0.4 and 2.4±0.5mmol/l, P<0.05;24 hours before delivery 3.0± 0.4 and 2.5± 0.4mmol/l, P<0.01;72 hours after delivery 2.5±0.5 and 1.3±0.4mmol/l, P<0.001.RUP excretion in hypertensive pregnant women increases from 1.2±0.6g/l at second trimester to 4.5g/l ±1.1 twenty four hours before delivery and return to 0.25±0.3g/l three days after delivery. Normotensive pregnant women have average of 0.23±0.3g/L 24 hours before delivery and 0.20±0.2g/l three days after delivery. FFA correlate positively with diastolic blood pressure(DBP) r<0.027, mean arterial pressure(MAP) r<0. 046.RUP positively correlate with systolic (SBP)r<0.026 and DBP r <0.009, MAP r<0.017.However,FFA ratio with RUP correlate positively with all vascular status index considered; SBP r<0.01,DBP r<0.003, (MAP) r<0.005 and urinary protein r<0.002.

CONCLUSIONS

Increase in FFA and RUP ratio may be a good early predictor and diagnostic index in resource limited and standard laboratory where the patients lack fund. Increase in FFA may likely involved in the pathogenesis of pregnancy induce hypertension due to its positive correlation with mean arterial pressure.

ID: 15254 PIN: 233

THYROID HORMONES IN MALE INFERTILITY AMONG NIGERIANS SUBFERTILE COUPLES

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BACKGROUND-AIM

Thyroid hormones are recently recognized as playing a role in spermatogenesis, but their status in euthyroid sub fertile males is not clearly understood yet. This study was to investigate the concentrations of thyroid hormones in apparently healthy infertile male.

METHODS

This case control study involved 167 men aged between 25-50 (37 ± 6.3) years which were grouped into five based on sperm count: Group1- control (fertile males with sperm count of 20 million and above, n=35), Group 2- Azoospermia (no sperm, n=18), Group 3- Severe-oligospermia (1-5million sperm count, n=31), Group 4- Oligospermia (less than 20million sperm count, n=61), and Group 5- Idiopathic (infertile males with more than 20million sperm count, n=22). Semen samples were collected by masturbation from each subject after at least three days of sexual abstinence. Semen biophysical parameters were assessed with light microscope. Serum and seminal fluid thyroid hormones concentrations were assayed with ELISA technique. The data obtained were analysed using statistical package STATA version 13.0.

RESULTS

The results showed that the serum Thyroid Stimulating Hormone (TSH) concentration was found to be significantly lower in infertile groups than those in the control group ($P < 0.003$) whereas the concentrations of serum T3 and T4 hormones in these groups were significantly lower than those found in infertile groups ($P < 0.05$). However, the concentration of seminal fluid T4 was significantly higher ($P < 0.003$) in the control group than those in the infertile groups although the seminal fluid TSH and T3 followed the pattern of the serum counterpart. There was gross distortion in the combinative ratios of serum T3/TSH (1:3 in fertile men and 6:1 in oligospermic men). TSH demonstrated strong positive correlation with motility ($r= 0.263$; $P < 0.002$), morphology ($r= 0.287$, $P< 0.002$), sperm count ($r= 0.213$, $P<0.05$), whereas T4 had positive correlation with volume ($r= 0.2412$, $P < 0.05$), sperm viability ($r=0.314$, $P < 0.001$).

CONCLUSIONS

The results indicate a strong association of the thyroid hormones with abnormalities in semen biophysical parameters and consequently male fertility status. Therefore, in the investigation of male infertility, determination of thyroid hormones status can play a significant role

ID: 15258 PIN: 234

ASSOCIATION OF RELATIVE EXPRESSION OF MIR-143 AND MIR-33B SOLUBLE LEVELS WITH ADIPONECTIN MULTIMERIC FORMS, CORPORAL REDISTRIBUTION OF FAT MASS AND IMMUNOMETABOLIC MARKERS IN INDIVIDUALS WITH OBESOGENIC PHENOTYPE

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BACKGROUND-AIM

The obesogenic phenotype corresponds to the pathological increase of adipose tissue and phenotypically manifests as immunometabolic component. The presence of miRNAs in serum involved in metabolic regulation, particularly miR-143 and miR-33b, has been identified, so it is considered that soluble miRNAs are the most promising non-invasive predictive biomarkers.
This study addresses the integration of the parameters in the production of adiponectin and its multimeric forms and immunometabolic profile with the gene expression of miRNAs in the clinical scenario of obesity associated with pathological adiposity.

METHODS

A cross-sectional study included 142 individuals classified as having an obesogenic phenotype and a non-obesogenic phenotype characterized by BMI, with and without excess fat mass and with and without abdominal obesity, respectively. Metabolic and inflammatory markers, body fat distribution were measured by routine methods. Serum insulin and adipokines were measured by ELISA and the expression of miR143 and miR33b serum levels with the TaqMan Advanced miRNA Assays system, the results were normalized with the endogenous microRNA miR320a.

RESULTS

The following differences were observed between individuals with obesogenic phenotype versus non-obesogenic phenotype ($P<0.05$): increase in body dimensions and storage of body fat, as well as low-grade chronic subclinical inflammation represented by levels of ESR, C-reactive protein, C3, C4 and greater number of mononuclear cells. Metabolic dysregulation shown with an increase in the lipid profile, apolipoprotein A-1 and HOMA-IR.
On the other hand, there was an increase in the levels of serum adipokines and dysregulation of the multimeric forms of Adiponectin, parallel to obesogenic factors, with an increase in the expression of miR33b while the expression of miR143 remains constant.

CONCLUSIONS

The increase in the expression of miR33b and the deregulation in the levels of the multimeric forms of sAdiponectin in individuals with an obesogenic phenotype are associated with the corporal redistribution of fat mass and immunometabolic markers, suggesting a response to chronic subclinical inflammation and present metabolic dysregulation in obesity originating in the pathological state of adiposity.

ID: 15259 PIN: 235

SINGLE NUCLEOTIDE POLYMORPHISMS IN LEP – 2548 G>A Y LEPR + 668 A>G IN RHEUMATOID ARTHRITIS MEXICAN MESTIZOS: ASSOCIATION WITH AGE AT DIAGNOSIS, DISEASES ACTIVITY AND ANTI-CCP ANTIBODIES

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BACKGROUND-AIM

Rheumatoid arthritis (RA) is a chronic inflammatory disease. Leptin, has been associated with inflammation markers and articular damage in RA and the anti-citrullinated protein antibodies. These points towards that single nucleotide polymorphism (SNP) in leptin and its receptor might influence the participation of these adipokine in RA pathogenesis.

METHODS

We enrolled 116 patients with RA (ACR 1987) matched with 133 control subjects by age, gender and body mass index (BMI). Subjects were evaluated for fat mass. Also leptin (sLep), soluble leptin receptor, TNF. In patients with RA we evaluated disease activity and anti-CCP. Genotypes of LEP -2548 G>A and LEPR 668 A>G were determined by PCR-RFLPs using HhaI and MspI restriction enzymes.

RESULTS

Genotypes of LEP -2548 G>A and LEPR 668 A>G were distributed according to Hardy-Weinberg´s equilibrium. There was no difference in genotypes distribution of LEP -2548 G>A and LEPR 668 A>G between RA and control. LEPR 668 G allele was associated with higher anti-CCP titers and disease activity score compared to LEPR 668A/A homozygotes, 4.2 ± 1.7 vs. 3.46 ± 1.2 P=0.012. LEP -2548A allele was associated with younger age of RA diagnosis vs. G/G homozygotes, 35.9 ± 11.5 vs. 41.8 ± 13.9 years old (P = 0.045). OR for diagnosis before 40 years old was 2.7 (CI95% 1.04 – 7.45). Serum leptin was 2 to 3 times higher in RA preobese and obese RA anti-CCP(+) than controls (P < 0.05) independently of SNP's in LEP and LEPR.

CONCLUSIONS

In preobese and obese patients with RA anti-CCP (+) there is an increased sLep production. LEP -2548 G>A is related with a younger age at diagnosis of RA and LEPR 668 G/G was associated with increased anti-CCP titers and disease activity. These suggests that there is an additive effect between chronic inflammation of RA and obesity were leptin may favors humoral immune response against citrullinated proteins and influence the severity of RA.

ID: 15260 PIN: 236

ADIPOSITY AND LOW-GRADE INFLAMMATION ARE RELATED WITH THE PRODUCTION OF MULTIMERIC FORMS OF ADIPONECTIN AND C3 LEVELS IN OBESITY AND INSULIN RESISTANCE

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BACKGROUND-AIM

In obesity, the inflammation increases the amount and size of adipocytes (hyperplasia and hypertrophy), further, macrophage infiltration in white adipose tissue is higher. These processes together, dysregulate the secretion of adipokines. Adiponectin is a multifunctional adipokine, a major adipocyte-secreted protein downregulated in obesity. It exerts strong insulin-sensitizing, anti-atherogenic and anti-inflammatory activities. It is synthetized as a monomer, however, suffer an extensive post-translational process to form trimers (low-molecular weight, LMW), hexamers (medium molecular weight, MMW), and high molecular weight (HMW, 12-18 monomers) species, known as a multimeric forms.
The aim of this work was to investigate the possible dysregulation of adiponectin multimeric forms with the presence of low grade inflammation in insulin resistance (IR), obesity and adiposity.

METHODS

This cross-sectional study included 183 adult subjects, classified with obesity and IR according to WHO and Stern criteria, respectively. Corporal composition was determined by bio-impedance and anthropometrics, immune-metabolic markers using routine methods and adiponectin and insulin by ELISA method.

RESULTS

Women showed higher levels of total adiponectin (P=0.017), medium molecular weight (MMW) adiponectin (P=0.002) and high molecular weight (HMW) adiponectin (P=0.012). Higher LMW-adiponectin levels were associated with non-IR subjects (P=0.002). Individuals with normal range BMI presented higher levels of HMW-adiponectin (P=0.023) and lower levels of LMW-adiponectin (P=0.012) versus obesity subjects. Inverse correlations between HMW-adiponectin with trunk fat mass (r from -0.37 to -0.51), legs fat mass (r from 0.39 to 0.53), and C3 (r=0.33) were observed. These results were consistent and corroborated with an ANCOVA test.

CONCLUSIONS

We demonstrated a relationship between low grade inflammation state, obesity, IR and adiposity with the dysregulation and proportional production of adiponectin multimeric forms and C3 by the trunk adipose tissue, corroborating the concept that a low-grade inflammation state favors the develop IR.
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ID: 15262 PIN: 237

RAPID DETECTION OF MYCOPLASMA PNEUMONIAE BY LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ASSAY IN ACUTE RESPIRATORY TRACT INFECTION IN PEDIATRIC PATIENTS

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BACKGROUND-AIM

Mycoplasma pneumoniae is a common cause of a wide range of upper and lower respiratory tract infections, especially in children and in young adults. Routine laboratory diagnosis of M. pneumoniae infection is based mainly on serology and PCR. Rapid diagnosis of Mycoplasma pneumoniae pneumonia is required for timely treatment with effective antibiotics; however, PCR-based methods are often too expensive and technologically intensive for general use in clinical practice. In this study, we describe a rapid and sensitive loop mediated isothermal amplification (LAMP) method to detect M. pneumoniae.

METHODS

LAMP assay procedure is quite simple, wherein the amplification is carried out in a single tube under isothermal conditions at 62°C, and the result can be obtained in less than 1 hour. We have evaluated the use of LAMP to detect M. pneumoniae in clinical samples (nasopharyngeal or throat swab) obtained from 50 children presenting at the outpatient department with or hospitalized for acute respiratory symptoms, 1 month to 12 years old. The results are compared with PCR data for M. pneumoniae

RESULTS

The products obtained by LAMP were detected by direct visual detection, electrophoresis or tubidimeter. The sensitivity of the LAMP assay was 3.2x102 copies by a serial dilution of M. pneumoniae DNA. Among the 60 patients with acute respiratory tract infection, 30 patients were diagnosed with M. pneumoniae by qPCR. Of these 30 M. pneumoniae patients, 28 (93.3%) and 29 (96.7%) were identified by the LAMP assay and PCR, respectively.

CONCLUSIONS

Thus, the LAMP assay of Mycoplasma pneumoniae reported here has almost the same sensitivity and specificity as a PCR assay. The LAMP assay has more advantages of rapid amplification, simple operation, and easy detection than PCR . We concluded the LAMP assay maybe be useful for rapid diagnosis of M. pneumoniae.

ID: 15265 PIN: 238

A SMARTPHONE APP FOR IMPROVEMENT OF WARD MORNING BLOOD DRAWS OF THE STAT LABORATORY ORDERS

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BACKGROUND-AIM

Morning blood draws are collected by clinical laboratory technologists from 7:00 AM through 8:00 AM to have the results ready by 8:30 AM (stat report) or 10:30 AM (regular report) for physician rounds. The laboratory test turnaround time (TAT) that exceed the expectations of clinicians who order those tests, the so-called outlier test reporting rate. The timely available results of laboratory tests are more important to diagnosis and treatment for physicians in the emergency. The aim of this study is to assess the function of a newly developed smartphone App for supporting ward morning blood draws preparation.

METHODS

We and the staffs of information room in Pingtung Christian Hospital developed a new smartphone App for the ward morning blood draws based on the safety of patients and simplified laboratory flows. The reengineering strategies used included shortening blood draws time, making an interface intuitive and implementation of the patient identification and history record clearly. An independent two-sample t-test was used to compare the target achievement rate of Stat reports in Biochemistry and Hematology before and after the implementation of App in 2017.

RESULTS

The overall target achievement rate of Stat reports for Biochemistry and Hematology improved from 65% and 70% before the App to 86% ($p < .001$) and 91% ($p < .001$) after the App, respectively. Furthermore, the satisfaction of both inpatients and clinical laboratory technologist with regard to blood-drawing App improved from 62% and 74%, respectively to 95% ($p < .001$) and 98% ($p < .001$).

CONCLUSIONS

Our smartphone App of ward morning blood draws successfully improved the target achievement rate of stat reports and increased the satisfaction of inpatients and clinical laboratory technologists. The App provides an effective vehicle by which providers of laboratory services may improve the laboratory test turnaround time of stat laboratory orders from clinicians.

ID: 15278 PIN: 239

IMPROVE THE SAMPLE QUALITY FOR CEPHEID GENEXPERT BCR_ABL QUANTIFICATION

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BACKGROUND-AIM

Molecular monitoring of chronic myeloid leukemia patients treated with tyrosine kinase inhibitors is essential for therapeutic stratification. A commercial cartridge-based assay (Xpert BCR_ABL Monitor™, Cepheid) had been proposed as an automated assays in recent years. Invalid BCR_ABL quantitative procedures were observed in several chronic myeloid leukemia patients with elevated white blood cell counts greater then 60 x 103 /ul . This study aimed to optimize the operating procedures for GeneXpert BCR_ABL quantitative assay to enhance pre-analytical sample quality and prevent from unnecessary cost waste.

METHODS

53 blood samples from chronic myeloid leukemia patients were analyzed by GeneXpert BCR_ABL quantitative assay. Correlated white blood cell counts with BCR_ABL concentration of N% (International Scale), the study decreased the whole blood volume from 4ml to 50ul in the first run to improve the sample quality, achieve greater liquid suspension and make assay more successful in the first run of operation.

RESULTS

The study showed that the elevated white blood cell counts highly correlated with the BCR_ABL level of N% (IS) ($P<0.0001$). The decreased sample volume was applied in six patients with elevated white blood cell greater than 60 x 103 /ul ; moreover, 4 samples presented exceeded BCR_ABL transcript levels Ct (cycle threshold) cutoffs. Therefore, changes of the sample preparation to 50ul whole blood volume lead to effective operating procedures and reliable reports.

CONCLUSIONS

According to the package insert from manufacture, the 50ul of 1st lysate was needed for retesting procedure when expected high BCR-ABL expression. The white blood cell counts highly correlated (60 x 103 ~ 200 x 103 /ul) with BCR_ABL levels of N% (IS) ; hence, the study suggested that checking white blood cell counts before quantifying the BCR_ABL levels. Further research is needed to assess the amount of sample volume when white blood cell counts reach over 200 x103/ul.

ID: 15148 PIN: 24

ESTABLISH THE BEST MANPOWER DISTRIBUTION MODE BY ANALYSIS THE PATIENTS REGISTERING INFORMATION

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BACKGROUND-AIM

Blood collection counters in our hospital are located in different buildings and far from each other. We try to find a optimize model for manpower adjustment. This will enable supervisors to make dynamic adjustments for the supporting staff, and speed up blood sample collection time.

METHODS

The highest patient number is between 07:30 to 11:00 on Monday .Statistical analysis was performed using MICROSOFT EXCEL software in this study.1. Using half-hour as a unit. 2. Waiting time for patient is 15 minutes. 3. Staff service time of blood sampling is 3 minutes. 4. Monthly calculation of the reach rate of patient waiting time is less than 15 minutes. The above formula is used to calculate the week, half an hour interval, service minutes, minutes of waiting time, the number of days each week of month, the total number of tickets, the number of service counters, etc.

RESULTS

The average ticket number was near 40~49 for every half-hour period during peak time. The number of service counters was 3. Service times ranged from 1.91 to 3.50 minutes with only a period more than 3 minutes and nearly two-thirds of the period was less than 2.5 minutes. From the data collected over a two to four-month period, the counters were able to serve 75.2% of the patients with less than 15 minutes of wait time at peak time, and supporting staff is moved from different buildings. We resolved to implement the following items: 1. Increase one staff and one service counter during certain periods during the day, 2. provide skilled phlebotomists. The patient waiting time was significantly shortened .Overall, before implementing the improved measures in March, only 74.68% of the patients waited less than 15 minutes. In June, 91.26% of the patients waited less than 15 minutes. There was a significant decline in the
number of people waiting for more than 15 minutes after the improvement.

CONCLUSIONS

Therefore, by establishing a simple Excel analysis tool without increasing equipment investment (such as the purchase of automatic blood sampling tube preparation system and automatic registration machines) we are able to achieve a convenient and yet very effective management system to provide substantial improvement of patient waiting time.

ID: 15280 PIN: 240

COMPARISON BETWEEN TWO BIOCHEMISTRY ANALYZERS FOR THE DETERMINATION OF TRANSTHYRETIN

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BACKGROUND-AIM

Transthyretin is a serum protein synthesized in the liver and its half life is 2–3 days. Its main function is to transport retinol through its association with retinol-binding protein which prevents its glomerular filtration and subsequent catabolism in the kidney. Transthyretin also binds to thyroxine (T4) and transpors it, although its lower affinity than thyroxine-binding globulin.
Determining the level of transthyretin is a sensitive and cost-effective method to assess the severity of illness resulting from malnutrition in critically ill patients or those who have a chronic condition.
The aim of this study was to evaluate the results of transthyretin measured by two analyzers using nephelometry as a methodology.

METHODS

We compared transthyretin levels measured in 33 serum samples using two analyzers, BNII and Dimension Vista of the Siemens Diagnostics commercial house. Both employed an immunonephelometric method.
The comparison was carried out by analyzing the Bland-Altman plot, the Passing-Bablok regression and the Spearman´s correlation coefficient, using the Medcalc statistical program. A p-value< 0.05 was considered significant.

RESULTS

The results were as follows:
Transthyretin BNII(X): Minimum:0.066; Maximum:0.386; Median:0.223; Median CI95%:0.134-0.248.
Transthyretin Vista(Y): Minimun:0.057; Maximum:0.466; Median:0.204; Median CI95:0.134-0.250.
Difference average:0.0081; Correlation coefficient:0.883; CI95%:0.775-0.941; p-value:<0.0001; Regression ecuation:Y=0.0049+0.9667X; X-axis:0.0049; X-axis CI95%:-0.0289-0.0147; Slope:0.9667; Slope CI95%:0.9006-1.2143.
According to our results, we do not find a systematic constant and any proportional significant error was evidenced as the confidence interval for the ordinate values at the origin contained the value 0 and those for the slope contains the value 1. Therefore, from a clinical perspective, the results provided by both methods were interchangeable.

CONCLUSIONS

The comparison of the quantification of the serum between both analyzers has been satisfactory.
The nephelometric test available for the Dimension Vista autoanalyzer is a reasonable alternative to BNII analyzer, since both has a good correlation between them, being more economical and faster the Dimension Vista autoanalyzer.

ID: 15290 PIN: 241

EVALUATION OF THE ACCURACY AND CLINICAL VALUE OF ALBUMINURIA DETECTION USING A NEW URINE DIPSTICK.

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BACKGROUND-AIM

In 2008, the results on The Lancet showed that Taiwan has a prevalence rate of 11.9% of chronic kidney disease (CKD), however, only 3.5% of these patients knew they had it. This shows that the current traditional albuminuria detection may not be sufficient to detect early-stage renal disease. According to the guidelines of the American Kidney Foundation (KDIGO), the albumin to creatinine ratio (ACR) is the key indicator of early renal disease. This study was to evaluate the effectiveness of SYSMEX UC-3500 urine dipstick test (Meditape UC-11A) semi-quantitative ACR in assessing microalbuminuria.

METHODS

400 urine samples were collected. The Meditape UC-11A with the SYSMEX UC-3500 Automated Urine Analyzer was used for reflectance photometry. The ratio of protein/creatinine and albumin/creatinine was obtained by semi-quantitative detection of urine protein, microalbumin and creatinine. Albumin and creatinine were detected with Beckman Coulter DxC700AU. The consistency between the semi-quantitative ACR and the biochemical quantitative results were compared.

RESULTS

Taking the biochemical quantitative ACR report as the standard, the complete consistency rate of the semi-quantitative ACR report is 82.97% while the consistency of the class interval 100%. If the biochemical quantitative ACR>=30 mg/g was taken as the cut-off value, then the semi-quantitative dipstick test ACR, clinically significant microalbuminuria detection sensitivity, specificity, positive predictive value, negative predictive rate would be 90.41 %, 88.39%, 83.54%, 93.40% respectively. The 252 samples tested negative for conventional urinary protein, 19 of them (7.53%, 19/252) showed positive semi-quantitative ACR and from these 14 of 19 re-tested positive by biochemical quantification (73.68%). Compared to the quantitative immunoturbidimetric method, the correlation R values of the reflectance photometry of the dipstick test for the detection of microalbumin and creatinine were 0.934 and 0.869.

CONCLUSIONS

When comparing the new semi-quantitative ACR urine test with the quantitative immunoturbidimetric, the new urine test strip has good consistency and the clinical microalbuminuria is provided with reliable screening results. It can be used as a tool for early detection and expansion of population screening for nephropathy.

ID: 15292 PIN: 242

CLUSTER BAND METHOD IN LASER FLOW CYTOMETRY ANALYSIS OF ROD OR COCCI/MIX GROWTH BACTERIA: COMPARISONS WITH CLASSICAL UF1000I METHOD

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BACKGROUND-AIM

Using UF1000i (Sysmex, Kobe, Japan), we were able to predict growth of rod or cocci/mixed growth before urine culture (J Clin Lab Anal 2017 Sep; 31(5)). This study, we aimed to increase sensitivity rate of UF1000i in the differentiation of rods, cocci/mixed bacteria from women with uncomplicated urinary tract infection (uUTI).

METHODS

From January 2017 to January 2018, we enrolled 74 adult women (≧18 years old) with uUTIs from urologic clinics for study. Urine analyses were performed with laser flow cytometry and then diagrams were generated (forward scatter vs. fluorescent light scatter). Each specimen was classified as either rods or cocci/mixed growth according to the diagrams. Standard urine cultures were performed. The bacterial diagram has 5 units in the x-axis and in the y-axis.
According to the original description of UF1000i, if the angles of the clustered dots are ≦30。or >30。, the predicted culture results are rod or cocci/ mixed bacteria (classical method). We defined Cluster Band (CB) method in 3 ways: angle, width, and length, and interpret results as the followings. If the angles are <30。(mostly are 10。~20。), width <1 unit (mostly 1/3 to 1 units), and length between 1.5 to 4 units, the predicted results of urine culture are rods. If the width of the band clusters are greater than 1 unit in y-axis, the predicted results of culture are cocci/mixed bacteria.

RESULTS

Based on the results of urine culture, the CB method had a 91% sensitivity rate (49 out of 54) in predicting rods and a 65% sensitivity rate (13 out of 20) in predicting cocci/mixed growth. However, the classical UF-1000i method had a 76% sensitivity rate in predicting rods (41 out of 54) and a 50% (10 out of 20) sensitivity rate in predicting cocci/mixed growth.

CONCLUSIONS

Through the Cluster Band method, we were able to increase the prediction of rods or cocci/mixed growth of bacteria before urine culture. Large scale studies are required to prove its applicability and clinical usefulness in the future.

ID: 15301 PIN: 243

CROHN'S DISEASE BIOLOGIC THERAPIES ADVANCES: A CURRENT REVIEW

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BACKGROUND-AIM

Crohn's disease (CD) is an intestinal chronic inflammatory with unknown ethiology. Studies suggest that the pathogenesis of CD is associated with exacerbated immune system (IS). The new therapeutic with biological agents was developed for CD patients who not respond to conventional therapy. The Infliximab (IFX) therapy is one of more used in these patients. Non-responsers to IFX have other biologic therapeutics such as Certolizumab Pegol (CZP), Natalizumab (NTZ), Vedolizumab (VDZ), Ustekinumab (USTK) and Secukinumab (SCK).
The aim of this review is to analyze recent research about the action of IFX and to assess the effectiveness and safety of VDZ, CZP, USTK, NTZ and SCK for induction and maintenance treatment in adults with CD.

METHODS

The PRISMA guidelines were used search PubMed database using the keywords "Crohn's Disease", "Immune System", "Infliximab", "Ustekinumab", "Secukinumab", "Certolizumab Pegol" and "Vedolizumab". This was combined with exclusion and included criteria.

RESULTS

In a total of 417 publications were reviewed sixteen studies, including fourteen experimental studies and two review studies.
In IFX therapy it was demonstrated that 20-40% of patients responded and 40% of those who initially responded, lost response. It has been shown that there are several differences before and after IFX therapies in innate and adaptive IS, in tumor necrosis factor alpha production through the percentage of macrophages production, in IL-21 and IL-17A expression and in angiogenesis. In other biologic therapies, except SCK, it has been shown the effectiveness and safety in CD patient.

CONCLUSIONS

It has been shown that almost all these biologic therapies are rapid and effective in clinical response, promote mucosal healing and improve quality of life of these patients. The high disadvantage demonstrated was the probability to experience severe adverse effects. In future, it is necessary others studies to find an appropriate different mechanism of action to try to minimize the exacerbated response of IS. More studies about efficacy and safety in clinical response and remission of this therapies and others it is necessary.

ID: 15311 PIN: 244

BRONCHOALVEOLAR LAVAGE FINDINGS IN PATIENTS WITH INTERSTITIAL LUNG DISEASES

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BACKGROUND-AIM

Interstitial lung diseases (ILD) are a group of diseases were the main pathological changes affecting the alveolar structures. The study of the bronchoalveolar lavage fluid in some interstitial lung diseases can reveal typical patterns to each disease that can support the diagnosis. The objective of this study was to perform a descriptive analysis of the cytologic study and the lymphocyte subpopulations in bronchoalveolar lavage fluid from patients with interstitial lung disease.

METHODS

Retrospective study of the bronchoalveolar lavage fluids of 58 patients with ILD: sarcoidosis (SAR) (n=10), idiopathic pulmonary fibrosis (IPF) (n=12), non-specific interstitial pneumonia (NSIN) (n=20), cryptogenic organizing pneumonia (COP) (n=7), and extrinsic allergic alveolitis (EAA) (n=9). The bronchoalveolar lavage fluid was analyzed to determine the distribution of cell populations and the lymphocyte subsets: CD3+, CD19+, CD4+, CD8+, CD3+CD4−CD8−, and CD3-CD16&56+.The cell populations and the lymphocyte subsets were determined in a FACS Canto II Flow Cytometer. Values of cell populations and lymphocytes subsets were given in percentages (%).

RESULTS

The distribution of cell populations in bronchoalveolar lavage classified the interstitial lung diseases in three groups. Isolated lymphocytic alveolitis was found in SAR and isolated neutrophilic alveolitis was found in COP and IPF. Mixed alveolitis was the most common pattern in EAA and NSIN. The CD4:CD8 ratio was the most useful parameter in our study. The ratio was high in SAR (median, 5.80) and it was inverted in EAA (median, 0.19). It was low in the other interstitial lung diseases, with median values of 1.03 in IPF, 1.00 in NSIN and 1.07 in NOC. NK cells populations were higher in NOC (median, 28.00) than the others diseases with median values of 3.00 in SAR, 2.00 in EAA, 4.50 in IPF and 3.00 in NSIN.

CONCLUSIONS

The study of the bronchoalveolar lavage fluid parameters in association with clinical and radiologic data help us to discriminate between interstitial lung diseases. The CD4:CD8 ratio can discriminate sarcoidosis from the other interstitial lung diseases. NK cell populations can discriminate NOC from the others interstitial lung diseases. The bronchoalveolar lavage fluid should be considered a very useful tool in the diagnosis of the patients.

ID: 15313 PIN: 245

MULTIPLE MYELOMA: ALGORITHM TO AVOID DELAY IN THE DIAGNOSIS OF PATIENTS WITH MULTIPLE MYELOMA AT EMERGENCY SERVICE

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BACKGROUND-AIM

The presence of incidental clinical findings related to Multiple Myeloma (MM) in Emergency Service and Primary Care should be studied for screening the existence of a possible MM. A quick panel based on serum protein electrophoresis (SPE) and quantification of serum free light chains (sFLC) enables sensitive quantification of monoclonal component in the study of MM. The application of this screening panel in patients with these incidental clinical finding without other diagnosis can help us to efficiently detect a possible MM in much sorter times.

METHODS

We studied three patients admitted to Emergency Service where we found incidental clinical finding characteristic of multiple myeloma (anemia, hyperproteinemia, intense bone pain). Sera of the three patients were sent to the Laboratory of Immunology for the screening of a monoclonal gammopathy. SPE were performed on CAPILLARYS 2 (Sebia) and the sFLC were measured by FREELITE (The Binding Site) turbidimetric assay.

RESULTS

Case 1 (Man, 68 years)
Clinical finding: macrocytic anemia (9.0 g/dl hemoglobin), rouleaux formation of erythrocytes, discrete pancytopenia.
Protocol SPE+sFLC: weak peak in SPE (0.10 g/dl), sFLC ratio very altered (free kappa=14450 mg/l, free lambda=4.9 mg/l, ratio=2949) and immunoparesis.
Diagnosis: Light Chain Kappa Multiple Myeloma Stage 3 ISS
Case 2 (Woman, 65 years)
Clinical finding: hyperproteinemia (12 g/dl), hyperviscosity and thrombocytopenia.
Protocol SPE+sFLC: large peak (3.28 g/dl), altered sFLC ratio (free kappa=617 mg/l, free lambda=11.1 mg/l, ratio=55.59)
Diagnosis: Multiple Myeloma IgG Kappa Stage 2 ISS
Case 3 (Woman, 64 years)
Clinical finding: intense back pain
Protocol SPE+sFLC: large peak (3.22 g/dl), altered sFLC ratio (free kappa=3.15 mg/l, free lambda=102 mg/l, ratio=0.031)
Diagnosis: Multiple Myeloma IgA Lambda Stage 3 ISS

CONCLUSIONS

In the context of clinical symptoms (bone pain, pathologic fractures, anemia, hyperproteinemia, hypercalcemia) that are alerts to suspect multiple myeloma it is advisable to apply the protocol (SPE+sFLC) for the screening of monoclonal gammopathies in patients without obvious clinical diagnosis. The combination of SPE and sFLC yields a fast and highly sensitivity approach in the screening of monoclonal gammopathies.

ID: 15314 PIN: 246

MULTIPLE MYELOMA: LABORATORY BIOMARKERS IN THE IDENTIFICATION OF RESIDUAL DISEASE

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BACKGROUND-AIM

The quantification of heavy/light chains pairs (HLC) can identify separately the different light chain types of each immunoglobulin class. In this case we show the utility of the quantification of HLC pairs as a method to monitoring and identifying residual disease in a patient with IgA-Kappa Multiple Myeloma.

METHODS

We present the case of 51 years old man diagnosed of IgAK Multiple Myeloma ISS-3 stage [hypercalcemia, increased total proteins, altered ratio of serum free light chains and osteolytic bone lesions].

RESULTS

At diagnosis (Day 0) the serum proteinogram (SPE) shows a well-defined monoclonal large peak in the gamma region (4.34 g/dl correspond to monoclonal component) identified by immunofixation as IgA-Kappa. The IgA HLC ratio (IgAK=66.604 g/l, IgAL=6.302 g/L, ratio=10.57) identified clonal disease IgA-Kappa at diagnosis. The patient began treatment with Bortezomib, Cyclophosphamide and Dexamethasone and the monoclonal protein was monitorized by SPE, IFE and HLC. During the treatment, the monoclonal protein was decreasing with reduction of the peak in SPE and the HLC ratio remained altered confirming the presence of the monoclonal protein. The monoclonal component IgA-Kappa was decreasing due to the good response to the treatment. At day +58 (after 4th cycle of chemotherapy) there was a little peak in SPE (0.18 g/dl of monoclonal component), with positive IFE and altered ratio HLC (IgAK=3.566 g/l, IgAL=0.664 g/l, ratio=5.37). At day +68 the SPE was negative but the HLC ratio remained altered (IgAK=3.566 g/l, IgAL=0.664 g/l and ratio=5.37) confirming the existence of monoclonal protein that it was verified by IFE. At day +131 (end of 5th cycle of chemotherapy) the SPE, HLC and IFE were negative confirming the absence of monoclonal protein due to the good response to the treatment.

CONCLUSIONS

The use of the HLC IgAK, IgAL and their ratio IgAK/IgAL presents itself as an alternative method with high sensitivity for monitoring these patients, particularly in situations where traditional techniques show limitations. The high sensitivity of the determination of HLC allows typing monoclonal component providing equivalent information to the immunofixation, with the added value of reporting a quantitative value.

ID: 15318 PIN: 247

APPLICATION OF PHOTOMETRIC-BASED LAL TEST FOR RADIOPHARMACEUTICAL INJECTIONS

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BACKGROUND-AIM

Pyrogen, released from gram-negative bacteria, can cause chills, fever, tachycardia, hypotension and respiratory distress in humans. The Limulus Amebocyte Lysate (LAL) test is a most widely used bacterial endotoxin test to detect unsatisfactory levels of pyrogen in radiopharmaceutical injections. This study was designed to determine the tolerance ranges of pH and organic solvent concentration of radiopharmaceuticals using the photometric-based LAL test.

METHODS

Radiopharmaceutical [F-18]FDG injections were used for the evaluation. The PH values of the [F-18]FDG solutions were adjusted to various values in the PH range 2 to 10. The organic solvent samples were prepared with absolute ethanol concentration ranging from 0 to 10% (v/v). LAL test was performed using Endosafe-PTS™ portable spectrophotometer (Charles River, Charleston, SC, USA). All samples tested using 5-0.05 EU/mL sensitivity cartridges. The result was considered valid as long as the spike recovery and coefficient of variation (CV) parameters are included in the acceptance criteria.

RESULTS

A photometric-based LAL test results revealed the valid spike recovery and CV values over the pH range of 4 to 10 units. The photometric-based LAL tolerated up to 0.625% of ethanol. LAL test results had an invalid recovery in ethanol solutions ranging from 10 to 1.25% (v/v).

CONCLUSIONS

The pH of most radiopharmaceuticals are within a range of 4 to 8. Radiopharmaceuticals containing 10% ethanol is frequently used in clinic routine. The pH of radiopharmaceutical injection will not affect the result of photometric-based LAL test. However, the ethanol containing radiopharmaceutical injections should be diluted to no less than 0.625% of ethanol.

ID: 15330 PIN: 248

DOES URINARY TRACT INFECTION AFFECT THE A/C RATIO DETERMINATION IN AUTOMATED URINE ANALYZER, SYSMEX UC-3500

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BACKGROUND-AIM

Microalbuminuria arises from increased leakage of small quantity albumin through the glomerular and is considered a predictor of progressive renal disease. However, the definition of microalbuminuria is affected by different sampling, detection and difference in albumin quantity range. Since proteinuria is a common finding with symptomatic UTI, we aimed to evaluate the performance of the automated urine analyzer, Sysmex UC-3500, for screening microalbuminuria in women with uncomplicated UTI.

METHODS

Subjects with uncomplicated cystitis defined as outpatient clinic patient, female, age from 20 to 70, and the score UTISA questionnaire >=4 were enrolled for study. The middle urine samples were collected after washing the vulva. Within one hour, the collected urine sample were analyzed by UC-3500 and UF-1000i (a laser flow cytometry detecting bacteria) and urine cultured. After antibiotic treatment the urine sample were collected again and analyzed by the same process. UC-3500 defined A/C ratios as negative, 1+, and 2+ if it is <30, 30~150 and ε300 mg/gCr, respectively.

RESULTS

From Jan. 2017 to Jan. 2018, 74 women with uncomplicated cystitis were enrolled. Before treatment, the A/C ratios were 1+ to 2+ in 34 (45.9%) specimen, and negative in 40 (54.1%). After antibiotic treatment, 28 of 34 (82.4%) the initial A/C ratio positive (ε1+) turned to negative and 6 of 34 (17.6%) stayed positive. Thirty-eight of 40 (95%) the initially negative stayed negative and 2 (5%) turned to positive.
Before treatment, 32 (55.2%) A/C ratio positives were observed in 58 LEU positive samples. After treatment, 30 (93.8%) A/C ratio positive turned to negative. Before treatment, 2 (12.5%) A/C ratio positives were detected in 16 LEU negative samples. These two cases remained A/C ratio positive after treatment.
Before treatment, there are 30 A/C ratio positive (54.5%) in the 55 NIT positives and 4 A/C ratio positive (21.1%) in the 19 NIT negatives. After treatment, 28 A/C ratio positive (93.3%) turned to negative. The 4 NIT negative and A/C ratio positive cases turned to negative.

CONCLUSIONS

Microalbuminuria detected by UC-3500 may be affected by urinary tract infections. Both leukocyte esterase and nitrite may be linked to the detection of microalbuminuria by UC-3500.

ID: 15341 PIN: 249

A SINGLE CENTER STUDY TO EVALUATE THE SURVIVAL TIME OF COLORECTAL CANCER IN TAIWAN PATIENTS AT DIFFERENT TREATMENT GROUPS

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BACKGROUND-AIM

Colorectal cancer (CRC) is the second most common diagnosed cancer and the third leading cause of death in Taiwan. The principal treatment options of CRC include surgical resection, chemotherapy, radiation and targeted therapy. In this study, we investigated the treatment outcome of the CRC patients at different stages by evaluating the survival time of patients at different treatments, either alone or in combination.

METHODS

A retrospective study based on the cancer registry database of Kaohsiung Veterans General Hospital was performed from 2005 to 2015 for 3783 cases of stage I to IV CRC. Kaplan-Meier and Cox regression modeling were used to assess the influence of treatment group on overall survival.

RESULTS

Approximately 5.4% of patients have not received treatment in this cohort. The survival time (12 months) on the group with no treatment is lower than those of the treatment group with survival time of 91 months ($p<0.000$). In the early stage group, the patients who received surgical resection only showed the highest survival time of 127.5 months. For the patients at stage II and III, those received surgical resection in combination with chemotherapy have the highest survival time of 122.2 and 102.5 months, respectively. In the stage IV group, the patients who had surgical resection combined with chemotherapy and radiation treatment showed the highest survival time of 34.5 months. Among the treatment groups, those received chemotherapy or radiation therapy only have the low survival time at any stages.

CONCLUSIONS

Based on our results, survival time was significantly higher for the patients who had surgical resection as part of their treatment at all stages of colorectal cancer. For the patients at early stage, surgery treatment only can come out with the best effect. However, in the advanced stage, the patients received surgery treatment combined with chemotherapy and even radiation therapy can improve the survival time.

ID: 15182 PIN: 25

DROP-TO-DROP VARIATION IN CAPILLARY HAEMOGLOBIN CONCENTRATIONS

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BACKGROUND-AIM

Blood obtained by capillary fingerprick sampling is commonly used for point of care testing. Several studies have compared blood parameters in capillary and venous blood of individuals, but few have addressed variability in blood parameters measured in successive drops of capillary blood obtained from the same fingerprick.

METHODS

HemoCue 201+ was used to measure the haemoglobin (hb) concentration in nine successive drops of fingerprick blood from 20 healthy volunteer donors. For comparison, a venous blood sample was drawn from each donor, and nine separate drops of venous blood were subsequently analysed using the same instrument. In addition, the venous sample was repeatedly analysed by the Sysmex XS-1000i automated haematology analyser nine times.

RESULTS

When measuring the hb concentration in nine drops of venous blood using HemoCue 201+, the average coefficient of variation (CV%) was 0.8% (n=20). In comparison, when measuring the hb concentration in nine successive fingerprick drops from the same patients, the average CV% was 3.5 times higher (2.8%, n=20). For one of the patients, the hb concentration varied as much as 2 g/dL between fingerprick drops.

CONCLUSIONS

These results confirm that the within-run precision of the HemoCue 201+ instrument itself is acceptable, however, they indicate that one should optimally use venous blood sampling in stead of capillary fingerprick sampling when measuring the hb concentration using point of care instruments.

ID: 15343 PIN: 250

ABO GENOTYPING MAY SUBSTITUTE SALIVA TEST AND ABSORPTION ELUTION TEST IN ABO SUBTYPES ANALYSIS

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BACKGROUND-AIM

The aim of this study is to use erythrocyte ABO genotyping to assist serological typing in the identification of suspected ABO subtypes.

METHODS

Five ABO subtypes specimen were analyzed using following methods, ABO serological typing(reverse typing: anti-A, anti-A1, anti-B, anti-A,B, anti-H; forward typing: A cell, B cell, auto-control), antibody screening test, absorption elution test, saliva test, ABO genotyping, ABO 6-7 exons, FUT-1(H), 2(Secretor) and 3(Lewis) sequencing.

RESULTS

Five samples respective results through sequence were cisAB01/O1, B(A)04O1, parabombay B, and two cases of O1/O1 and O02/O02 weak antibody for the reverse typing test. The ABO genotyping showed the absolutely consistency between saliva test and absorption elution test.

CONCLUSIONS

We summarized a combination of ABO genotyping and serological typing can be used for identification of suspected ABO blood groups.

ID: 15362 PIN: 251

FIRST EXPERIENCE ON A NEW METHOD FOR GLYCATED ALBUMIN MEASUREMENT ON AU5800 (BECKMAN COULTER): OVERVIEW ON A SMALL POPULATION IN PRATO

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BACKGROUND-AIM

Glycated haemoglobin (HbA1c) is currently the gold standard for glucose monitoring and diagnosis in patients with diabetes. However, conditions that determine alterations in haemoglobin metabolism can interfere with the reliability of HbA1c measurements. Recently, it has been observed that in patients with clinical conditions which may interfere with haemoglobin, such as those with haemoglobinopathies, haemolytic secondary or iron deficiency anaemia, pregnancy and uraemia from haemodialysis, HbA1c does not accurately represent the glycaemic status. Glycated albumin (GA) and Fructosamine (FRU) are alternative markers of glycemia, which have been recognised to provide additional information to HbA1c or to provide a reliable measure when HbA1c is observed not to be dependable. Additionally, while HbA1c monitors the exposure to circulating glycemia in the previous 3 months, Glycated albumin and Fructosamine represent exposure for a shorter period, which may be beneficial to monitor rapid metabolic alterations or changes in diabetes treatment.

METHODS

We tested HbA1C in 77 samples with CE from Sebia, Italy. The results were divided in 32 normal (HbA1c δ40 mmol/mol); 31 abnormal (HbA1c ε57 mmol/mol); 14 HbA1c normal or abnormal with HbA2 δ2.0% or ε3.0%. On the same samples we tested GA. We used GA QuantILab Glycated Albumin assay (Instrumentation Laboratory Werfen Italy) which is an in vitro diagnostic assay for the measurement of GA based on an enzymatic method coupled to a colorimetric output. The assay includes ready-to-use reagents for the separate measurements of GA and total albumin. The concentration of GA in the sample is expressed as a percentage of total albumin.

RESULTS

We compared the results of HbA1c with GA% in normal samples and abnormal ones. For the normal HbA1c, GA% has a similar trend. As far as abnormal samples are concerned, we found that results up to 60 mmol/mol have a regular trend, but from 60 to 70 mmol/mol the relation between HbA1c and GA becomes irregular. About HbA2, it seems that there is no influence on the measurement of HbA1c and its correlation with GA%.

CONCLUSIONS

In conclusion, we found that more samples with HbA1c between 60 and 70 mmol/mol should be tested to investigate their irregular behaviour, which is probably related to the different glycation of these two proteins.

ID: 15366 PIN: 252

CHRONIC HEPATITIS B INFECTION MAY CAUSE FALSE POSITIVE RESULTS IN ANTI-DSDNA ASSAY EMPLOYING PLASMID DSDNA AS ANTIGEN SOURCE

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BACKGROUND-AIM

The 2017 ACR-EULAR new criteria for classification of Systemic Lupus Erythematosus (SLE) requires patients samples have with anti-nuclear antibodies (ANA) titer above 1:80 on when tested using HEp-2 indirect immunofluorescence assay. Autoantibody against the double stranded DNA (dsDNA) also play an important role in diagnosis of SLE. This study aims to evaluate samples that have been tested ANA negative; but positive for anti-dsDNA using plasmid dsDNA as antigen source.

METHODS

4,623 patient samples have been collected in Taipei Veterans General Hospital, Taiwan were tested for anti-dsDNA and anti-nuclear antibodies. Quantification of anti-dsDNA antibodies measured was performed using a fluorescence enzyme immunoassay (plasmid dsDNA antigen, cut off value 15 IU/mL, Thermo Fisher Scientific) and ELISA (salmon sperm, cut off value 100 IU/mL, EUROIMMUN). Anti-nuclear antibodies were measured using an indirect immunofluorescence assay on HEp-2 cell (DiaSorin).

RESULTS

Of the 4,623 patients, 34 were positive for anti-dsDNA but with ANA titer below 1:80. Hepatitis B Virus was detected in 24 patients, with 15 determined to be chronic HBV infection (62.5%, 15/24). High correlation of dsDNA values (plasmid dsDNA antigen) with HBV DNA level were observed. For these anti-dsDNA positive patients, 7 patients were diagnosis with SLE (7/33, 21.2%); 2 patients were diagnosed with both SLE and HBV infection (2/33, 6.06%). 8 of chronic HBV infection patients were tested negative (<100 IU/ml) for anti-dsDNA by ELISA method with only 3 patients' anti-dsDNA
value above 15 IU/mL.

CONCLUSIONS

From the few chronic HBV infection patients that were diagnosed with SLE in our study, it seems that SLE related anti-dsDNA antibodies are not induced by hepatitis B virus infection. One possible reason we believe to be that the autoantibodies are cross-reactive with anti-virus dsDNA. Hepatitis B virus contains partially double stranded circular DNA genome. Circular plasmid dsDNA antigen is seen more like HBV genome structure than other dsDNA source. With the high prevalence of chronic hepatitis B in Asia, hepatitis B testing should be considered in those positive anti-dsDNA assay using plasmid dsDNA as antigen source.

ID: 15371 PIN: 253

IMPLICATION OF ALTERED RESTING ENERGY EXPENDITURE, INFLAMMATION AND INSULIN RESISTANCE IN SICKLE CELL ANAEMIA

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BACKGROUND-AIM

Sickle cell anaemia (SCA) is a haemoglobinopathy characterized by chronic inflammation and altered resting energy expenditure. Reports have shown that inflammation plays a vital role in the development of insulin resistance and type 2 diabetes mellitus. However, occurrence of diabetes mellitus is rare in individuals with SCA. This study was carried out to determine the relationship between inflammation, insulin resistance and basal metabolic rate in adults with sickle cell anaemia.

METHODS

Fifty adults with SCA and 40 apparently healthy individuals (controls) age and sex matched were recruited into this study. Clinical history and indices of demography and anthropometry were obtained and standard electrophoresis method was used to confirm the diagnosis of SCA. After an overnight fast, 10 ml of venous blood was obtained from each participant into appropriate bottles to obtain serum and plasma which was stored at -20oC until analyzed. Plasma glucose level was determined using the glucose oxidase method while the serum levels of insulin, C-Reactive Protein (CRP) and ferritin were determined using ELISA. Thereafter, selected indices of insulin sensitivity and basal metabolic rate were calculated using appropriate equations. Data analysis was done and P-values less than 0.05 were considered as statistically significant.

RESULTS

The mean basal metabolic rate (BMR) were significantly lower in SCA compared with controls. Similarly, the median levels of CRP, ferritin, insulin and Quantitative insulin sensitivity check index (QUICKI) were significantly lower in SCA compared with controls. In contrast,the median values of 1/fasting insulin (FI) and Glucose(G)/ insuin(I) were significantly higher in SCA compared with controls. There was significant positive correlation between CRP and ferritin while BMR and age, BMI and QUICKI had significant inverse correlation.

CONCLUSIONS

It can be concluded from this study that there is low level of insulin, low insulin sensitivity and high basal metabolic rate in individuals with SCA and that the level of inflammation in SCA might not be as elevated as it is thought hence, inflammation does not seem to play a role in the development of insulin resistance in SCA. The lower insulin and ferritin may be as a result of high protein turnover and associated hypermetabolism in SCA.

ID: 15372 PIN: 254

ASYMPTOM INFECTION WITH TRICHURIS TRICHIURA : A CASE REPORT

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BACKGROUND-AIM

Trichuris trichiura, or whipworm, is a very common intestinal helminthic infection worldwide. It often occurs in tropical and subtropical areas, especially in areas with poor sanitation. Trichuris is spread via fecal-oral transmission. In the soil, the eggs develop into a 2-cell stage, then an advanced cleavage stage, and then embryonate. Eggs become infective in 15 to 30 days. After ingestion by the host (via soil-contaminated hands or food). Larvae hatch in the small intestine, where they grow and molt, finally taking up residence in the large intestine. The time from ingestion of eggs to development of mature worms is approximately 3 months.

METHODS

A 36-year-old man underwent a routine colonoscopy exam. Colonoscopy performed revealed a white, straight end of a worm-like object in the cecum. The parasite was carefully retrieved by forceps, and put into container of formalin. Hematoxylin and eosin staining revealed barrel-shaped ova in the object.

RESULTS

Patient's medical history was unremarkable. Laboratory data shows normal white blood cell count ($7.9X10^9$/L) with higher eosinophil count (6.2%). GOT,©-GT and CRP was higher. Colonoscopy revealed H. pylori infection and with a small, white, whip-like worm attached to the cecum in this patient. One end of the parasite was embedded in relatively normal mucosa. The object have an elongated anterior end that contains the mouth and esophogus that stretches into a thread-like point. Microscopically, the parasite was consistent with a T. trichiura.

CONCLUSIONS

Trichuriasis is an intestinal infection of human beings caused by ingesting embryonated eggs from the environment. Disease severity is related to the intensity of infection (worm burden), with the most intense infection occurring in a minority of infected individuals. Colonized eggs hatch and enter the crypts of small intestine as larvae. T. trichiura invade the mucosa and produce minor inflammatory changes at localized sites. In typical infections, worms live relatively harmlessly in the caecum and appendix, with no larval migration through systemic tissue. However, even mild infections can affect fitness, growth, and cognitive abilities of the host. In endemic areas, most people are colonized by small numbers of worms and have no symptoms.

ID: 15375 PIN: 255

THE PREVALENCE OF ANTI-FORS ANTIBODIES IN A PORTUGUESE POPULATION.

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BACKGROUND-AIM

Forssman (Fs) antigen (Ag) expression on sheep red blood cells (RBCs) was first described by John Frederick Forssman in 1911. The expression of Fs antigens on RBCs varies among species; rarely present on human RBCs and most commonly found on non-primate mammals RBCs e.g. sheep. Anti-Fs antibodies (Ab) are naturally occurring in human sera and is predominantly IgM but can also be IgG. Thus, anti-Fs Ab may have significant implications in transfusion medicine with its ability to activate complement and induce intravascular haemolysis of RBCs with Fs Ag expression. Furthermore, as anti-Fs Ab are naturally occurring, its prevalence is high in humans. Currently, the worldwide incidence of the FORS blood group system is unknown but is likely of low prevalence. This is because most individuals are genetically Fs Ag negative unless individuals have inherited a SNP Arg296Gln. This study was designed to investigate anti-Fs prevalence in a Portuguese patient and donor population in Central Region of Portugal.

METHODS

A total of 2316 plasma samples were studied, (1116; 48%) from patients and (1200; 52%) donor samples were screened for anti-Fs Ab. 3-5% sheep RBC suspension with Fs Ag expression was mixed with the plasma by tube technique and investigated for agglutination. A plasma sample from an Apae individual was used as a negative control, and monoclonal anti-Fs Ab (M1/22.25.8HL cell line supernatant) as a positive control.

RESULTS

From the donor samples tested, 547 (45.6%) are Group A, 527 (43.9%) are Group 0, 79 (6.6%) are Group B and 47 (3.9%) are AB. Regarding the Rh system, 989 (82.4%) of the 1200 donor samples were RhD positive, while 211 (17.6%) were RhD negative. All donor samples were positive for the anti-Fs Ab with differing strengths of reactions depending on the donor's AB0 group. In general, anti-Fs titre in group A and 0 donors respectively were stronger. For the patient population studied, 1115 samples were positive for the anti-Fs Ab and one was negative for the presence of anti-Fs Ab.

CONCLUSIONS

The prevalence of anti-Fs Ab in a Portuguese donor and patient population is high, this provides evidence of FORS System as a rare blood group system. The only negative sample should be further studied namely regarding SNP Arg296Gln or any other mutation.

ID: 15379 PIN: 256

AVOIDING THE UNNECESSARY THYROID TESTS REQUESTS BY USING POPULATION BASED DATA

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BACKGROUND-AIM

TSH is the initial test for the evaluation of thyroid disorders. Free thyroxine (fT4) should be measured in the setting of TSH value which is out of reference interval.However most laboratories use reference intervals of assay kit and that means many inappropriate test requests of fT4.In our study we aimed to determine a new reflexing cutpoint different from kit based value.

METHODS

In our study, data set obtained from the database of Ankara University Cebeci Hospital laboratory. This data set include 12.240 TSH and fT4 test results measured by ADVIA Centaur XP (Siemens Diagnostics, Tarrytown, NY). TSH and fT4 results imported to MedCalc for Windows, version 15.0 (MedCalc Software, Ostend, Belgium). A ROC curve was generated for the new low TSH cutpoint for reflexing fT4 test.

RESULTS

94.1 % (11.517) of 12.240 fT4 results were in reference intervals (11.5-22.7 pmol/L),on the other side 84.6 % (9.747) of these 11.517 TSH results were in reference intervals (0.55-4.78 mU/L).A ROC curve was done to determine TSH cutpoint for evaluating an increased FT4 and we found δ 0.15 mU/L of TSH value with 85.2 % sensitivity and 75.8 % specificity.

CONCLUSIONS

We recomend all laboratory professionals to evaluate their low TSH cutpoint for reflexing fT4 test to avoid unnecessary thyroid test utilization

ID: 15386 PIN: 257

IMPLEMENTATION OF A DIAGNOSTICS CONSULTATION SERVICE IMPROVES HEALTH OUTCOMES

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BACKGROUND-AIM

Consultations with other healthcare practitioners and consumers provide clinical laboratory scientists (CLS) the opportunity for evidence-based (EB) assessment of the impact of diagnostic information on health outcomes. However, neither methods for characterization of CLS consultations nor impact of CLS consultations on health outcomes has been reported.

METHODS

To address the role of CLS consultations in clinical decision support (CDS), consultation services (implementing the Consultation Model) have been established and evaluated in four healthcare delivery settings: consumer information response team (CIRT), diagnostic management team (DMT), patient care rounding team (PCRT), and utilization review (UT).

RESULTS

Elements comprising each consultation model and delivery setting have been described. Consultation interactions in each setting are characterized by multiple variables including provider type, medical subject (diagnosis), diagnostic question, related testing cycle phase, related treatment phase (screen, monitor, diagnose), and complexity (number of hand-offs and/or logic steps). CIRT consultations involve direct interaction with consumers and most questions relate to interpretation of basic diagnostics parameters like reference ranges and results interpretation. DMT consultations are mostly inpatient and complex requiring hand-offs among multiple providers. PCRT consultations can be simple or complex and often involve expedited literature searches using hand-held devices and interaction with other team members like pharmacists and medical librarians. UR consultations are driven by laboratory information system data generated by specific locally-generated and published rules defining daily reports of errors and inappropriate test orders.

CONCLUSIONS

From these consultations, priority for direction of clinical laboratory (CL) resources (material and human) and value (quality/cost) of CL information have been established. Implementing the Consultation Model, real time evidence from consultation services is combined with evidence from the literature, used to monitor for and correct patient safety concerns, and inform efforts to provide accurate, timely information for CDS and shared decision-making between consumers and healthcare providers.

ID: 15391 PIN: 258

TWO CASES REPORT OF PLASMA CELL NEOPLASM WITH ASSESSMENT BY CAPILLARY ELECTROPHORESIS

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BACKGROUND-AIM

Plasma cell neoplasm occur when abnormal plasma cells or myeloma cells form tumors in the bones or soft tissues of the body. There are several types of plasma cell neoplasms including multiple myeloma, plasmacytoma, lymphoplasmacytic lymphoma, and monoclonal gammopathy of undetermined significance (MGUS).These diseases are all associated with a monoclonal protein which can be detected from the blood by using capillary electrophoresis.

METHODS

Serum is prepared and electrophoresis is performed at alkaline PH in a capillary using the Sebia® Capillary 2 . Albumin and globulins are detected by the detector which is located in the cathode of the capillary and are transformed to peaks in the figure. Serum was treated with beta-mercaptoethanol which reducing the polymerized immunoglobulin to monomer immunoglobulin to clarify two M-protein are secreted from the same plasma cell clone in bone marrow.

RESULTS

Case 1 : A 78-year-old female presenting dysuria, oliguria and leg edema for several months. Laboratory data showed proteinuria, leukocytosis, results of high serum IgA and ⌊ light chain. Renal biopsy found amyloid fibrils in glomerular mesangial area. Serum protein electrophoresis show a major monoclonal peak in ß region and minor small peak in © region, and the immunotyping studies for serum showed two IgA/⌊ type.
Case 2: A 55-year-old male presenting abdominal distension and low back pain for more than one month. Laboratory data showed T12 T8 compression fracture, results of high serum IgM and ⌈ light chain. Bone marrow aspiration showed the cells from the bone marrow are B cells with monotypic ⌈ chain expression. Bone marrow biopsy found this is lymphoplasmacytic lymphoma (Waldenstrom macroglobulin). Serum protein electrophoresis show a monoclonal peak in ß region and the immunotyping studies for serum showed IgM/⌈ type.

CONCLUSIONS

Plsma cell neoplasm can be diagnosed by many examination. Among them, using capillary electrophoresis by a lab can separate several types of gammopathy and the quantification of a monoclonal peak can be used to evaluate the patients' prognosis or treatment.

ID: 15395 PIN: 259

USING HEMOGLOBIN A1C TEST FINDING POTENTIAL BETA-THALASSEMIA PATIENTS IN NORTH TAIWAN POPULATION

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BACKGROUND-AIM

Beta-thalassemia is a very common hereditary disease in Taiwan, mainly because of variations or defects in the beta-hemoglobin gene that prevent the normal synthesis of beta-hemoglobin chains and lead to abnormal hemoglobin production. Most of the patients are mostly those who do not have any symptoms or have no effect on their health, but some reports have pointed out that due to the shortened average blood-cell life of patients with thalassemia, the value of hemoglobin A1c will be appear low, can not directly respond to the judgment of the average blood sugar. But the vast majority of those who may not know their genetic defects in beta-thalassemia for the rest of their life, so when the most common hemoglobin A1c test can screen out such a group, there is a large diagnosis of diabetes help, but also can help more people with the understanding that they may have hidden genetic diseases.

METHODS

This study is the result of statistical analysis of hemoglobin A1c detected by capillary electrophoresis (Sebia) in the past year. With reference to the numerical values of HbA2 and Hb F, statistics on samples suspected of beta-thalassemia are available the proportion of patients in our hospital.

RESULTS

Preliminary results show that beta-thalassemia patients account for about 1% of the hemoglobin A1c test proportion in our hospital, which is not yet included in other hemoglobin variants.

CONCLUSIONS

There are a number of hemoglobin A1c result and fasting blood glucose miss match, which is the situation we could not explain when we used affinity method before.

ID: 15209 PIN: 26

PREANALYTICAL STORAGE OF TUMORMARKERS CA 19-9 AND CA 15-3

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BACKGROUND-AIM

Investigations of Preanalytical stability of cancer-antigen CA 15-3 and CA 19-9 are not well documented. The manufacturer recommendation is analyzing before 24 hour and if not the sample have to be frozen at -20°C. In our laboratory, the sample are analyzed twice a week and kept at 2-8°C before analyzing. The aim of this study was to investigate how long samples could be stored at 2-8°C or 20-22°C without clinical important in change concentration using Westgaards ´optimal goalds´.

METHODS

After collected in BD SSTTM II Advance®gel tube, the sample were centrifuging in 10 min. at 3000 g and stored at 2-8°C or 20-22°C until analyzing. All patient specimens were analyzed within 36 hour, 0-sample. After day 0 the specimens were analyzed day 1,2,3,4,5,6,7 and 8 on BRAHMS Kryptor with Time-Resolved Amplified Cryptate Emission.
Westgaard “optimal specification” for bias and Total Error (TE) were used as allowed maximal deviation. For CA 19-9 Bias <±16,4 % and TE is <±23 %, limits accordingly for CA 15-3 is 7,9 % and 10,4 %.
Concentrations were normalized (deviation/0-value*100). For each day, the standard error of mean (SEM) (SEM=SD/□n) and 90 % confidence interval (CI = X + t*SEM□X – t*SEM) was calculated.
25 and 17 CA 19-9 samples were stored at 2-8°C and 20-22°C, respectively. Range of concentration 5-4000 U/L. 20 and 11 CA 15-3 samples were stored at 2-8°C and 20-22°C, respectively. range 8-38 U/mL and 2 > 200 U/mL.

RESULTS

CA 15-3 stored at 2-8°C or 20-22°C do increase in concentration; however, the increase is within the limit of 7.9 % until 8 days for 2-8° C and 6 days for 20-22°C. CA 19-9 concentrations are within acceptable limit for 8 days stored at 2-8°C and 20-22°C. For CA 19-9 there are no change of mean value. For both components, 95 % of the results are within acceptable TE limits.

CONCLUSIONS

CA 19-9 can be stored in both refrigerator as well as room temperature 8 days before analyzing. CA 15-3 can be stored in 8 days at 2-8°C and 6 days at 20-22°C.

ID: 15403 PIN: 260

THE IMPACT OF THE HEMODIALYSIS DURATION ON CALCIUM, PHOSPHORUS AND ALKALINE PHOSPHATASE LEVEL

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BACKGROUND-AIM

Chronic kidney disease (CKD) includes a wide spectrum of different pathophysiological processes associated with abnormal kidney function and progressive decline of glomerular filtration rate (GFR). Chronic kidney disease is a major public health problem in Kosova and throughout the world. Disturbances in mineral metabolism and bone disease are common complications of CKD and an important cause of morbidity and decreased quality of life in patients with CKD.

METHODS

This is a cross sectional study done at Clinic of Biochemistry, University Clinical Center of Kosovo (UCC). 48 CKD patients divided in three groups (I Group < 5 years in Hemodialysis, II Group 5-10 years in Hemodialysis and III Group > 10 Years in Hemodialysis) were studied. Serum levels of Calcium, Phosphorus and Alkaline Phosphatase (ALP) were performed and measured in biochemical analyzer "I-Lab 650" – by Instrumentation Laboratory. All patients of the three research groups were treated in Clinic of Nephrology at UCC. Phlebotomy is done in the morning before application of hemodialysis.

RESULTS

In first study group the mean values of Calcium (2.33 ± 0.11 mmol/l), Phosphorus (1.5 ± 0.41 mmol/l), and ALP (99.7 ± 39.10 U/L). In second study group the mean values of Calcium (2.53 ± 0.13 mmol/l), Phosphorus (1.39 ± 0.47 mmol/l), and ALP (105.5 ± 47.10 U/L). In the third study group we have found mean values of Calcium (2.47 ± 0.21 mmol/l), Phosphorus (1.55 ± 0.64 mmol/l), and ALP (235.8 ± 209.10 U/L)

CONCLUSIONS

Based on our results ALP concentration is increased with duration of dialysis, which means that dystrophic changes in bone worsen with disease progression. There is no significant difference in calcium and phosphorus levels between three groups of patients.

ID: 15405 PIN: 261

EVALUATION OF RHODOSTOMIN VARIANTS AS SPECIFIC ANTAGONIST ON REGULATING INTEGRIN ALPHA(5)BETA(1) RECOGNITION

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BACKGROUND-AIM

Integrins are ubiquitous cell adhesion receptors that bind ligands on the surface of other cells and in the extracellular matrix and involved in bidirectional signaling across the plasma membrane, regulating cell adhesion, differentiation, migration, growth, and survival. Integrin ⟨5ß1 is the only unambiguously proangiogenic integrin, which is a potential drug target for the treatment of cancer. Rhodostomin (Rho) is an Arg-Gly-Asp-containing snake venom disintegrin, containing a ^{48}PRGDMP motif, that inhibit the platelet aggregation by blocking integrin ⟨IIbß3 of platelets. Based on phage-display experiments, the phages contain PRGDGW, FRGDGW, TRGDGW, SRGDGW, FRGDGF, YRGDGF, and TRGDGF sequences can selectively bind to integrin ⟨5ß1. Therefore, we proposed to incorporate these sequences into the RGD loop of Rho to design integrin ⟨5ß1-specific disintegrin.

METHODS

We have expressed sixteen Rho mutant proteins, including ARGDEP, ARGDAP, ARGDDN, ARLDDL, AKGDWN-NPHKGPAT, SRGDGW, FRGDGW, TRGDGW, RRGDGW, KRGDGW, FRGDGF, TRGDGF, PRGDGF, ARGDGF, RRGDGF, and KRGDGF sequences in Pichia pastoris and purified them to homogeneity. The experimental molecular weights of Rho and its mutants produced in P. pastoris were deviated less than 1 Da when compared with their theoretical values. These values were calculated by assuming all cysteines formed disulfide bonds, indicating the formation of six disulfide bonds in Rho and its mutants. We also used platelet aggregation and cell adhesion assays to examine their specificity and activity to integrins ⟨IIbß3, ⟨Vß3, and ⟨5ß1.

RESULTS

In contrast to the results of phage display experiment, our results showed that the SRGDGW, FRGDGW, TRGDGW, FRGDGF, TRGDGF, and PRGDGF mutants cannot selectively inhibit integrin ⟨5ß1. The RRGDGF and RRGDGW mutants inhibited integrins ⟨IIbß3, ⟨Vß3 and ⟨5ß1 with the IC50 values of >5950, 1157 and 280.6 nM, as well as >5950, 1813 and 64.2 nM, respectively.

CONCLUSIONS

Our findings indicate that the RRGDGF and RRGDGW mutants of Rho can selectively inhibit integrin ⟨5ß1, suggesting that the R48 residue N-terminally adjacent to the RGD motif may interact with integrin ⟨5 subunit.

ID: 15134 PIN: 262

THE INDIVIDUAL ROLE OF IL-6, TNF-ㄑ AND EPO IN THE DIAGNOSIS OF HEPCIDIN-RELATED IRON DISORDER.

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BACKGROUND-AIM

Iron disorder is a harmful condition with iron imbalance, including hemochromatosis, iron deficiency anemia (IDA), anemia of chronic disease (ACD), and etc. For iron status monitoring, hepcidin is an emerging and key candidate for clinical diagnosis. Hepcidin, a liver-derived peptide hormone, is the most important regulator for systemic iron homeostasis by managing the degradation of iron transporter ferroportin. We will dissect the role of hepcidin in 3 aspects: (1) Find out the different expression of IL-6, TNF-ㄑ, EPO and hepcidin in ACD, IDA and control patients. (2) Investigate the mechanism of regulating hepcidin in genetic/ protein level. (3) Define the detective range of hepcidin to distinguish the ACD and IDA. Our purpose is to define the clinical decision limits and establish validated assays by investigating the mechanism to improve the clinical diagnosis and treatment for iron disorders.

METHODS

Study Design (Brief Description)
● Inclusion criteria：Iron deficiency anemia (IDA)
● Exclusion criteria：Non anemia
● Withdraw criteria and rescue medication：The patient can call 02-66289779＃3230 to abort the program anytime.
● Sample Size and Study Duration：We will recruit 50 participants. Study duration since 20170101～20180228.

RESULTS

Not yet analyzed

CONCLUSIONS

Not yet analyzed

ID: 15007 PIN: 263

WORKING AS A DIAGNOSTIC PARTNER

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BACKGROUND-AIM

In 2013 The Diagnostic Partner was on the agenda as a development project at the EFBS (European Society of biomedical laboratory Scientists). Since then the Clinical Biochemical Laboratory at NOH (North Zealand Hospital) in Denmark has been looking into how the Biomedical Laboratory Scientist (BLS) can become an efficient diagnostic partner. Two projects reflect the above; one is carried out at The Acute Unit at the Hospital and the other in eight communities. Both projects have focus on how the BLS, can establish efficient professional relations between different health professionals. These relations enable well organized treatment plans for the patient/citizen.

METHODS

• At The Acute Unit the work flow from the patient is admitted for an ECG (Electrocardiography) until the BLS acts on an abnormality in the ECG is tested. The BLS is trained by a cardiologic nurse and the skills are tested before and after the training. The obtained skills make it possible for the BLS to distinguish between a normal or abnormal ECG and alert the medical doctor and thereby act as a diagnostic partner.
• At the communities a research project founded by the Danish Health Department is looking into how to prevent readmission to the hospital for the elderly citizen. The project emphasizes on training the nurses working in the communities to measure C-reactive protein (CRP) on a POCT (Point-of-care-testing) analyzer. If a treatable infection arises the treatment of the citizen can begin and this may prevent readmission to the Hospital. The BLS will train the nurses and also carry out the quality control of the POCT analyzer.

RESULTS

• 16 BLS´s has been trained in ECG analysis and this is reflected in a more sufficient ECG flow. The quality of the ECG has been enhanced and time has been narrowed from ordination to the ECG is available. As the other project progress, valued knowledge will be collected.

CONCLUSIONS

Both projects reflect the importance for BLS´s to maintain and develop skills in the field of being a diagnostic partner. Their technical skills and organized way of working are crucial to succeed. The patients and citizens will benefit from the enhanced interaction between different health professionals and different sections in the Danish Healthcare system.

ID: 15049 PIN: 264

THE EFFECT OF A CERTAIN HOSPITAL IN THE MIDST OF TAIWAN PERFORMING HEALTHCARE POLICY FOR COLORECTAL CANCER SCREENING

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BACKGROUND-AIM

In Taiwan, the morbidity of colorectal has ranked second and the third for death rate among all type of cancers. And the trend is increasing year by year. Having faecal occult blood test periodically ensures us to find the cancer out in advance or the testing method of precancerous lesions. The death rate and the medical expense can be massively reduced after treatment.This research studies the efficiency of the prevention and healthcare policy issued by a hospital in the middle of Taiwan.

METHODS

Colorectal cancer screening was performed using quantitative immunochemical stool occult blood test (KYOWA), and encouraged to use colonoscopy as a follow-up confirmation. There are 66,610 (50 to 69 years) people receiving colorectal cancer screening between 2010 and 2017 in Show Chwan Memorial Hospital. Statistical analysis of the positive screening cases with and without the follow-up confirmation was performed.

RESULTS

Total of 66,610 (50 to 69 years) participants received fecal occult blood screening test.There were 7,679 cases (11.5%) were positive for occult blood reaction. 4,064 positive cases (52.9%) received colonoscopy, but the other 3,615 (47.1%) did not receive further colonoscopy. Of the 4,064 positive cases with colonoscopy, 82 (2.0%) normal, 1,289 (31.7%) hemorrhoids, 26 (0.6%) ulcerative colitis, 2,245 (55.2%) polyps, 132 (3.3%) colon cancer, and others 153 (3.8%).

CONCLUSIONS

There were 3,615 (47%) subjects with positive occult blood did not receive further confirmation.Obviously we still have a lot of space to improve early detection of colon cancers.Ministry of Health and Welfare confirmed the colorectal cancer screening is an effective screening of colorectal cancer.Clinical medical technicians should use outpatient health education, community health education, and telephone surveillance to improve screening rates for early diagnosis and treatment of colon cancers.

ID: 15196 PIN: 265

EVALUATION OF THERAPEUTIC EFFECT IN CHRONIC HEPATITIS C TREATMENT DURING 2014-2017

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BACKGROUND-AIM

In Taiwan at least 6 hundred-thousand people got hepatitis C infection,with prevalence of 4%,higher than that in other Asian neighborhood.There is still no vaccine for hepatitis C virus(HCV) due to its high genetic diversity.The current guidelines for management of chronic infection are combination peginterferon plus ribavirin with dosage and duration based on genotype.This study was to evaluate the therapeutic effect in patients who received entire treatment regimens during 2014-2017;with an aim to working out the recurrence likelihood according to present criteria of successful treatment.We hope to help the clinicians take more effective follow-up actions .

METHODS

A retrospective review ,duing 2014 till 2017, from 303 chronic HCV patients who underwent golden standard treatment was made.Blood specimens were tested for HCV genotype and viral load monitored at week 4,12,24 and 48 during the course.Sustained eradication of HCV (ie, SVR), defined as no persistent viral particles in sera 24 weeks after complete therapy was set as criteria of cure.The recurrence rate was thus calculated.Genotypes (including subtype) were classified by real-time polymerase chain reaction (PCR) methods via referral to an institution, qualified by Taiwan Accreditation Foundation.HCV viral load was also analyzed by PCR.

RESULTS

Among the entire study population,134 (44.2%, 134/303)of those have attained to completion and experienced SVR. However,7 individuals were discovered of HCV RNA in blood 4 weeks to 2 years after SVR;with recurrence rate of 5.2% (7/134),with genotype distribution as follows;4 type 1b,2 type 2 and 1 type 1 (non-subtype 1a,1b). In addition, 37 subjects (12.2%, 37/303)of those failed therapy during course, with genotype distribution: 22 type 1b,9 type 2,3 type 1a,1 type 1 (non-subtype 1a,1b) and 2 type conversion.The overall recurrence rate was 14.5% (44/303): contributed by type 1b (59.1%, 26/44) predominantly .

CONCLUSIONS

The recurrence rate was 5.2% based on current criteria of cure. Luckily, new oral antivirals ; alternative options for patients, are covered by health insurance in Taiwan since 2017. Further investigation of mutagenetic loci would be our goal. In the future, a better efficacy of management to decrease the incidence of liver cancer could be expected by molecular epidemiology.

ID: 15225 PIN: 266

IDENTIFICATION AND CHARACTERIZATION OF LEGIONELLA PNEUMOPHILA IN FRIULI VENEZIA GIULIA

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BACKGROUND-AIM

Legionella (L) is the main etiological agent of legionellosis normally acquired by inhalation of aerosols containing the bacterium, most notably L. pneumophila (90% of legionellosis) that cause pneumonia. Currently, more than 50 species and 71 serotypes of L. are known. ARPA multisite Laboratory is the Friuli Venezia Giulia (FVG) regional reference for the environmental diagnosis of legionellosis. Purposes: 1) distribution of L. pneumophila strains in the regional area useful to identifying the source of infection and recognition of the local or travel-related origin of the strains present in the FVG regional area. 2) Identification of mutant L. pneumophila strains.

METHODS

Detection of L. pneumophila in water samples (ISO 17025 certified Laboratory) from 2002 to 2016 using culture method and latex agglutination serological method for typing species (ISO 11731). The detection of L. pneumophila DNA by qualitative real time PCR on CFX Deep Well Optical Module (AFNOR Aquadien, iQ Check Screen, Biorad; ISO/TS12869). Sequence-based typing (SBT) of selected isolated L. pneumophila strains (ESGLI, European Society of clinical microbiology and infection diseases).

RESULTS

Between 2002 - 2016, 19119 samples of water from over 700 different sites were analyzed with a average value of 1275 samples/ year. Among the 3657 L. pneumophila-positive samples identified (19%), 1379 cases were type 1 (37.7%), 2222 type 2-14 (60.76%) and 53 type spp (1.45%)

CONCLUSIONS

Serological method shows some limitations such as cross-reactions with unrelated or new L-shaped bacteria. A consensus SBT-database typing (EWGLI database, European Work-Group for Legionella-Infections) for L. pneumophila is much more precise, allowing serological method limits to be overcome. SBT typing of L. pneumophila is ongoing, still now we have identified a case of type 2 L. pneumophila with a new mutation in the mompS allele, that can not be identified by serological method.

ID: 15229 PIN: 267

ULTRASOUND CARDIOGRAPHY CONFERENCE IN OUR CARDIOVASCULAR TEAM

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BACKGROUND-AIM

Ultrasound cardiography(UCG) conference has been scheduled every Friday since 2017, which are insisted of sonographers (Medical technologists) and cardiovascular surgeons.

METHODS

The UCG findings in vascular disease patients, mainly aortic and mitral valve, and discussed between the sonographers and surgeons. We check UCG and clinical data such as CT, XP, Clinical records, and Laboratory data at the conference, and discuss the clinical strategy in them patients. Then, surgeon presents the intra operative video of the discussed patient previously.

RESULTS

We compare the preoperative echo data and the real valvular findings, and try to evaluate more correctly in next patients.There were 11 cardiac operations per month at the establishment of the cardiovascular surgery; the number has increased 17 cases per month after two years and half. As a result, the Profit of the whole hospital leads to improving.

CONCLUSIONS

We could improve our echo technology and the clinical judgement because of the meticulous discussion between the preoperative echo data and the operative real valvular findings in our echo conference.
We would like to develop our echo conference by the participation of a lot of cardiologists to improve medical judgement and patient's benefit.

ID: 15233 PIN: 268

A SURVEY OF THE MELATONIN QUANTITY AND FREE RADICAL RELEVANT DISEASE APPRAISES IN THE NIGHT WORKS THE NURSING STAFF'S BLOOD

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BACKGROUND-AIM

Exposure to light at night may increase the risk of breast cancer by suppressing the normal nocturnal production of melatonin by the pineal gland, which in turn, could increase the release of estrogen by the ovaries. This study investigated whether such exposure is associated with an increased risk of cancer disease in night shift workers.

METHODS

worker at day (n=89), at night (n=100), aged 20-55 years, blood test for melatonin sulfate (EIA) odds ratios (ORS) and 95% confidence intervals (CIs) were estimated by use of conditional logistic regression. Result: The night shift workers melatonin levels were low than the day workers ($p<0.001$).

RESULTS

The day worker serum melatonin was 1.2±1.1 at 14:00, 45.2±23.3 at 23:00. The night shift worker serum melatonin was 1.0±0.9 at 14:00, 38.1±22.5 at 23:00. The night shift workers melatonin levels were low then the day workers ($p<0.001$).

CONCLUSIONS

Melatonin, the primary hormone of the pineal gland, acts as a powerful chronobiotic, maintained normal circadian rhythms. In workers with sleep disorders and altered circadian rhythms, such as occur in jet lag, night shift work, and various neuropsychiatric disorders.

ID: 15256 PIN: 269

EFFECT OF WHEY AND HERRING ROE PROTEIN AFTER ADMINISTRATION TO YOUNG HEALTHY PERSONS. A PILOT STUDY.

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BACKGROUND-AIM

The herring roe protein is a product based on rest raw material, immature herring roe, from the pelagic industry. During a short fishing season, the immature roe is frozen and further processed by extraction. Immature herring roe is not a convenience product, but a valuable resource of lipid, phospholipids and protein. Whey protein is a widely used commercial supplement.

METHODS

A total of 49 young and healthy students from two study centers (University of Bergen and Norwegian University of Science and TechnologyTechnical University (NTNU)) were randomized to ingest 20 g/day of protein supplement during 28 days in winter/spring 2016.

RESULTS

During the study, 14 participants withdrew their consent, resulting in 35 students completing the study. Weight, BMI, fat %, fat mass, daily energy consumption, satiety, and post-prandial measurements on glucose and insulin were examined at baseline and after 28 days. BMI and weight was stable, and it was observed a tendency of increased fat free mass, although not significantly. Postprandial glucose was reduced, while insulin was increased after ingesting an oatmeal with protein supplement, compared to an oatmeal without protein.

CONCLUSIONS

Overall, there was a prominent effect of protein supplement, however, no significant differences were observed between whey and herring roe protein supplement.

ID: 15319 PIN: 27

IMPROVEMENT OF SPECIMEN LOSS SURGE AFTER PAPERLESS OPERATION INTEGRATION

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BACKGROUND-AIM

A total paperless operation mode has been implemented since our hospital introduced the automated laboratory information system(LIS) in Nov. 2014. Three phases of laboratory testing; pre-analytical, analytical and post-analytical, could be connected by format barcode labels, which record the whole process from the test ordered by the physician, container-labeled, specimen collected,transported,received by laboratory to reporting.In addition, the simplification of specimen coding, risk reduction of personal information leak and rise of recognition rate could be thus achieved. However, paperless operation of laboratory examination gave rise to case surge of specimens loss, especially those difficult to collect, that hazard patients most.

METHODS

PDCA approach was applied to figure out the key problems of specimen loss, including small collection containers, lack of delivery boxes or check of specimen numbers and without leak-monitoring. Improvement strategies were thus offered: 1. small containers (i.e, 1.5ml-tubes for humoraqueus) put into larger 50 mL-tube to make up for the size defect 2.delivery boxs available 3. face-to-face specimen numbers checked between delivery staffs and medical technologists via LIS 4. leak-monitoring executed to trace records and specimens received 5.regular audit by quality medical technicians to check leak-monitoring completed. The case numbers of specimen loss were analyzed before (Jan. to Apr., 2015) and after(May., 2015 to Dec.,2016) improvement.

RESULTS

The average case numberS of specimen loss during the action decreased from 1.25 to 0.094 per month , with improvement rate of 92.4%.

CONCLUSIONS

Paperless model is good for cost savings as well as environmental protection. It should be carried out with supplementary measures: regular audit of specimens leak-monitoring via LIS could provide effective quality management of pre-analytical phase and reduction of specimen loss risk. We hope to share our experience to other laboratories.

ID: 15297 PIN: 270

THE INTERDISCIPLINARY COLLABORATION OF NUCLEAR MEDICINE TECHNOLOGISTS IN PET/CT

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BACKGROUND-AIM

Biomedical technologists have many roles in the danish healthcare system. Each specialty plays an important role for the patient's health.
One of the newer and evolving specialties is PET/CT, where Nuclear Medicine Technologist (NMT) work with molecular imaging.

METHODS

The NMT is involved in tasks that efficiently contributes to investigations related to clinical trials and cancer diagnostics. A NMT that work in this field performs mostly molecular imaging as PET (Positron Emissions Tomography) studies mainly on oncology patients. Other PET/CT studies are focused on detecting abnormal diseases as dementia, infections and inflammations. To help physicians and radiologist find the right diagnosis and give the patient optimal treatment, the NMT make use of oral contrasts and intravenous injection of radioactive tracers. The uptake of these tracers in human cells allows the doctors to detect abnormal areas.
An NMTs daily work is associated to investigations, clinical trials, research and performing high quality procedures and examinations on humans and animal experiments in order to develop tracers that can label molecules to visualise tumor receptors. The NMT main focus is to enhance; professional abilities, knowledge and authority that benefits the patient. It is crucial to provide patients with assistance during procedures without compromising the individual dose limits that are permitted when working with radioactivity.

RESULTS

A NMT has the ability to identify a problem and then come up with solutions. Then evaluate each possible solution, using logic and reasoning to determine which solution will provide the best results. That´s why the NMT job might appear to be physically and mentally exhausting, unless the NMT is well trained to know when to put the patient´s needs first without getting out of physical or emotional balance.

CONCLUSIONS

The NMT strive to improve patient's care and needs. High quality and professionalism are key words in this field, therefore it is important to reach a good level of interdisciplinary collaboration with the staff from other specialties, where each professional has a shared responsibility for patients' care. This collaboration includes doctors, nurses, radiographers, physicists, secretaries, radiochemists and many other healthcare professionals.

ID: 15323 PIN: 271

USE TEAM RESOURCE MANAGEMENT TO REDUCE THE EFFECTIVENESS OF TEST REPORT CHANGES

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BACKGROUND-AIM

The medical technologist an important role in the diagnosis and follow-up of Physicians for patients . Because of a wrong test report, it is very easy to cause a doctor to misjudged the condition, which in turn endangers the patient's life safety. Therefore, it is an important mission for the inspection department to provide the correct and effective test results so that the patients can get proper medical treatment。

METHODS

One : Using team resource management is obvious in each unit set report change billboard ,including : Displays the last change report date,the reason for the report change and the time of change from the last report are expected to be communicated to the Unit by way of group collaboration to avoid the same mistakes occurring in a short period of time and to motivate the unit's peers to remind each other of the common goal of patient safety. Two : The number and reasons for reporting changes in the monthly meeting of Quality Improvement Meetings in the department, in addition to continuing review of the reasons for the change in the report and avoiding the same mistakes in their own experience.

RESULTS

Since the implementation of this plan at 2015, we statistics 2014-2017 the number of changes reported by the inspection section is as follows: 243 pieces in 2014,123 pieces in 2015, 70 pieces in 2016,60 pieces in 2017.The total number of changes has decreased markedly over the years, and the average number of change reports per month in each group has declined each year, with biochemical and microbial groups as examples . 2014-2017 annual monthly report change average number of items is 5.41 ,3.08 ,1.0 , 1.58 pieces / month and 7.83,2.75,1.58,1.42 pieces / month, the results are significant.

CONCLUSIONS

The Clinical examination report error caused by the modification, has been the first of the abnormal events in the laboratory, so the effective improvement is urgent, and therefore the hospital based on past experience in recent years, the implementation of the concept of team resources management hope to establish a common goal first - reduce the impact of report changes and change reports on patients and toward the medical quality 0 shortcomings stride forward.

ID: 15348 PIN: 272

BUFALIN ENHANCES IMMUNE RESPONSES IN WEHI-3 CELLS GENERATE LEUKEMIA MICE THROUGH ENHANCING PHAGOCYTOSIS OF MACROPHAGE AND NATURAL KILLER CELL ACTIVITIES IN VIVO

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BACKGROUND-AIM

Bufalin, a component from bufadienolides present in Chinese medicine Chan Su, has been shown to induce cancer cell apoptosis in many human cancer cells including human leukemia cells but bufalin has yet shown effects on immune responses in a leukemia mouse model. Herein, we investigate bufalin effects on the immune responses of WEHI-3 cells generated leukemia murine in vivo.

METHODS

In the first place, we used normal BALB/c mice i.p. injected with WEHI-3 cells to develop the leukemia mice and then these leukemia mice were individually treated with bufalin once in a two days by oral at various doses (0, 0.1, 0.2 or 0.4 mg/kg) for 15 days. At the end of treatment, all mice were weighted, blood, liver and spleen tissues were collected for cell markers, phagocytosis, NK cell activities and T and B cell proliferation analysis were evaluated by using flow cytometric assay.

RESULTS

Results indicated that bufalin treatment did not affect body and spleen weights but decreased liver weights, bufalin also decreased T, B and Mac-3 cell markers at 0.4 mg/kg but did not significant affected the cell marker of monocytes. Furthermore, macrophage phagocytosis activity was increased by bufalin treatment (at 0.4 mg/kg from PBMC and at 0.1 mg/kg from peritoneal cavity, respectively).and bufalin increased NK cell activities at 50:1 (Target cells:splenocytes). Bufalin at 0.1 and 0.2mg/kg increased B cell proliferation but only at 0.2 mg/kg can bufalin increased T cell proliferation. In serum biochemical markers analysis, bufalin may ameliorate LDH levels but deteriorate liver on account of elevation in GOT and GPT values.

CONCLUSIONS

Taken together, bufalin modulates immune responses in WEHI-3 cells generate leukemia mice through enhancing macrophage phagocytosis and natural killer cell activities in vivo.

ID: 15367 PIN: 273

THE VARIOUS PERIOD OF DETECTIVE TIME IN VARIOUS BACTERIA SPECIES: BLOOD CULTURE RESULT IN 3768 PATIENTS FROM TAIWAN

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BACKGROUND-AIM

This study aimed to evaluating the period of detective time on blood cluture mechine in patients with bacteremia and try to observe the different detective time in various bacteria species.

METHODS

The 3768 Taiwan patients from 2012 to 2016 who exam the blood culture enrolled in our studies. All positive blood culture bottles were identified the bacteria and antibiotics suspecebility test.

RESULTS

The positive rates in 3768 patients was 12.06% and 26 species of bacteria were identified in our studies. Among the bacteria species ,31.5% were Escherichia coli, followed by 15.7% were Staphylococcus aureus (61.3% were Methicillin-resistant Staphylococcus aureus), 11.2% were Klebsiella pneumoniae and 7% were Streptococcus spp. The mean±SD of detective time(duration) were 46.0 hours in Morganella (the longest time) in contrast to 11.3 hours in Acinetobacter baumannii (the shortest time).The detective time(duration) of Escherichia coli was 17.2 ± 2 hours, followed by 20.4 ± 3 hours for Staphylococcus aureus, and 15.8 ± 3.3 hours for Klebsiella pneumoniae($p<0.001$ in 26 species of bacteria).

CONCLUSIONS

Escherichia coli, Staphylococcus aureus, Klebsiella pneumoniae were the major bacteria species caused bacteremia in Taiwan and the detective time showed the significant difference in various bacteria species.

ID: 14784 PIN: 274

IMPROVING HEALTHCARE-ASSOCIATED INFECTIONS CONTROL BY SCAMPER MODEL

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BACKGROUND-AIM

The prevention and control of healthcare-associated infections is essential to patient safety and reduction of healthcare costs. In order to reduce the mortality and readmission rates of patients in hospitals, several strategies were launched in our hospital to achieve the objectives. We would like to share our experience about improvement of infections control by SCAMPER creative thinking approach.

METHODS

We implemented the SCAMPER model established by Bob Eberle for the management of nosocomial infection. In addition, the conventional QC techniques such as PDCA been applied routinely in our hospitals.

RESULTS

Substitute:The epidemic prevention cloud, an automatic data exchange program has replaced manual notification to avoid potential epidemic outbreaks and save on manpower. Combine:The implementation of bundle care could significantly reduce the incidence of HAIs in intensive care units through evidence-based improvement. Adapt:In order to improve the medication safety, the infectious disease physicians and clinical pharmacists perform on-line antibiotic stewardship programs to evaluate and optimize the appropriate timing and dosage of recommended antibiotics. Modify:The clinical microbiology laboratory provide prompt and useful antibiotic resistance report to actively inform clinical staff. The immediate and appropriate medical treatment is performed following the detailed information from laboratory. Put to another use: We suggested to organize and communicate in the three diverse but related to each other fields: infections control, occupational health and bio-safety. The overlapping duties of the specialists could comprehensively consider and classify the abnormal incidents. Eliminate: We used Statistical Analysis System to evaluate the raw data of HAIs to save the manpower of clerical survey and improve the efficiency. Rearrange: The change and simplify the workflow of routine blood draws from midnight to early morning improve patient sleep quality to decrease potential injuries from fatigued.The decrease in total infection rates per thousand days of healthcare-associated infections in our hospital is observed from 2.8‰ in 2009 to 1.38‰ in 2016.

CONCLUSIONS

In summary, the continuous quality surveillance of healthcare-associated infections control should be performed in the future.

ID: 15047 PIN: 275

COLLABORATIVE PEER-TO-PEER PROJECT

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BACKGROUND-AIM

Poster-presentation
A new curriculum for the biomedical laboratory scientist (BLS) education in Næstved gave way for implementing a peer-to-peer project-collaboration between students across semesters, where students, clinical and institutional teachers participate. The project encompasses a biomedical topic, which provides an insight and understanding of the patient's path through the healthcare system from a theoretical and clinical viewpoint. The purpose was to create a shared confident learning environment, where students and teachers can co-create knowledge in respect to the biomedical topic.

METHODS

To create this shared confident learning environment, we were inspired by literature on cooperative learning and peer-to-peer. We focused on the zone of proximal development by Vygotskij for the cooperative approach. A peer-to-peer strategy can empower both students and teachers to further learning from each other instead of learning alongside one another. In this project, the roles of student and teachers were suspended, transforming the teaching role to an inspiratory and motivator role. The student role would change to decision-making, organizing, planning, working collaboratively, giving and receiving feedback.
We designed the peer-to-peer project in 2 iterations, where the first iteration was implemented in spring 2017. The project progressed for a 2-week period; the projects could be literature reviews, patient interviews or laboratory experiments. At the end of the 2 weeks period, the students made an oral presentation of their finding for their peers. Based on the experiences from the first iteration, adjustments will be made to the second iteration, taking place in spring 2018.

RESULTS

After the first iteration we evaluated the peer-to-peer project with students and clinical teachers, both feeling positive about the peer-to-peer project. Furthermore, the students report an improved social involvement in the class as well as improved presentation-skills. Most teachers were positive, but some requested an increased commitment among the students and state that the projects lacked focus on the BLS profession angle.

CONCLUSIONS

In conclusion, we will continue working with the design of the second iteration by structuring the project framework stricter and providing the students with more cooperative learning tools.

ID: 15122 PIN: 276

THE ROLE OF MENTORSHIP IN IMPROVING THE QUALITY OF LABORATORY SERVICES

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BACKGROUND-AIM

Ministry of Health is working relentlessly to ensure that quality management systems (QMS) are available at all laboratory levels so as to improve health service delivery. Implementing partners and other stakeholders have been tasked to guarantee that personnel working in medical laboratories are trained in quality Management Systems. Mentorship is one of the training that has been adopted by the ministry and valuable in supporting laboratories to establish QMS. TASO Soroti sought to assess the impact of mentorship by Tororo hub laboratory to it in 2016

METHODS

A One on one Mentorship model was used in which a baseline assessment was conducted in October 2015 by the Tororo hub Laboratory team. A mentorship was conducted for TASO Soroti Laboratory staff after recommendation. A SIMS assessment was done in May 2016 by the TASO head quarter team. Another mentorship visit was conducted in July 2016. A CDC SIMS assessment was carried out on 27.09.2016. Progress was evaluated using the SIMS tool.

RESULTS

At baseline in October 2015, TASO Soroti had no green, 4 yellows and 3 reds where dark green denotes surpassing expectation, light green meeting expectation, yellow need for improvement and red denotes urgent remediation. During visit 2 in July 2016, it had 2 greens, 3 yellows and 2 reds. On 27th September 2016, it got 6 greens and 1 yellow

CONCLUSIONS

Mentorships by TASO Tororo hub improved TASO Soroti laboratory on SIMS assessment from 2 greens, 3 yellows and 2 reds in July 2016 to 6 greens and 1 yellow in September 2016. Several mentorship models can therefore be considered depending on the available resources for an accreditation implementation plan.

ID: 15214 PIN: 277

HYGIENE AND ENVIRONMENTAL MONITORING IN BLOOD BANKS

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BACKGROUND-AIM

Environmental monitoring in blood banks is described in various regulations and guidelines.
The aim of this study was to see how environmental monitoring was performed and followed up in blood banks in Norway and if possible influence a startup to prepare national recommendations or guidelines
The actual regulations and guidelines are: The Council of Europe: "Guide to preparation, use and quality assurance of blood component", PIC/S: "Guide to good manufacturing practice for Medicinal product" and our national regulations based on the EU-Directives.

METHODS

This study is based on a survey which was and sent to all the 28 blood banks in Norway, with the following aspects:
1. Which method was used?
2. What are the acceptance criteria?
3. How are these acceptance criteria chosen?
4. Which areas are monitored and how often?
5. How are the results followed up?
6. Rules for visitors to blood component lab.

RESULTS

1. There are two methods used in Norway.
9/28 used Hygiena system SURE plus (ATP-based), measuring in relative light units (RLU).
20/28 used agar plates, mainly Hygicult TPC (Orion Diagnostica). Colony forming units (CFU) are calculated after incubation at 37ºC.
2. The majority using agar plates had 20 CFU per 10cm2 as acceptance limit, while the rest had acceptance limit from 10-100 CFU per 10cm2.
In case of ATP-based technique, 7/9 had less than 100 RLU per 100cm2 as acceptance criteria.
3. 20 Blood banks followed instructions from the distributer to establish acceptance limits, 8 had established their own acceptance criteria after validation.
4. All monitored production and donation areas. The majority also monitored storage rooms and immunohematology lab.
13 monitored 4 times per year. 15 monitored from 1 - 12 times per year.
5. All had written standard operating procedure to follow up the results. Corrective measures were taken when results failed acceptance criteria.
6. The majority allowed visitors into the component lab only after using shoe cover and lab coat.

CONCLUSIONS

There are no concrete requirements for hygiene control given in available guidelines.
Acceptance criteria and frequency of monitoring varies widely.
Our survey shows that there is a great desire to establish national recommendations and/or guidelines for environmental monitoring

ID: 15219 PIN: 278

KNOWLEDGE ON SEXUALLY TRANSMITTED DISEASES AND ITS RELATION WITH HEALTH LITERACY AND ELECTRONIC HEALTH LITERACY: A STUDY IN PROFESSIONALS FROM A PORTUGUESE HOSPITAL

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BACKGROUND-AIM

Health literacy (HL) can be defined as the individual capacity of obtaining, understanding and using information, making appropriate decisions about health, which is fundamental to assess risk behaviours, helping to prevent the transmission of diseases. Electronic health literacy (eHL) is the capacity of judgment towards the obtained information and the ability to work with new technologies. eHL can be useful in spreading information, promoting and developing health actions. Sexually transmitted diseases (STDs) have a high prevalence in the world's population, so it's important to assess and relate them with these health education indicators.
Evaluate and relate the levels of HL, eHL and STD knowledge in professionals of a Portuguese Hospital.

METHODS

171 individuals of the different professions of a medium size Portuguese Hospital answered an anonymous questionnaire, divided in: sociodemographic data, STDs knowledge, and the Portuguese version of both eHEALS (to assess the eHL) and Newest Vital Sign (to assess the functional HL).

RESULTS

Approximately half of the sample (53,3%) has the possibility of an adequate level of HL and a high knowledge of STDs. 64% of the population has the possibility of an adequate level of HL and 68,8% have a high knowledge, being that the majority are health professionals (56,5% and 60,0% respectively). Individuals with a higher education degree we're found to have a higher possibility of an adequate level of HL (57,7%) and a higher knowledge on STDs (61,9%). In general, "I know how to find helpful health resources on the Internet" has the highest mean (3,99) and "I feel confident in using information from the Internet to make health decisions" has the lowest, 3,06.

CONCLUSIONS

Individuals with higher education, particularly in health sciences have higher knowledge in STDs and possibility of an adequate level of HL. The results show that little more than half of the sample has the possibility of an adequate level of HL and a high knowledge in STDs, which isn't a desirable percentage for individuals who work in a hospital, so maybe the hospital should provide specific education to the professionals to help improve these statistics, like lectures or seminars.

ID: 15324 PIN: 279

THE IMPRECISIONS IN THIS ERA OF PRECISION MEDICINE: PERSPECTIVES IN A RURAL HEALTH SETTING

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BACKGROUND-AIM

In this era of dramatic, rampant, and incessant political change, predictions about the future can no longer be based either on conventional wisdom or historical precedent. We are, after all, in the middle of a paradigm shift that is shredding prognosticators and their prognostications with voraciousness – especially in the acquisition and distribution of health services to the consumers. However, considerable inequities in health care access and outcomes between socio-economic groups remain. Thus, this paper primarily seeks to investigate and determine the barricades and challenges towards the attainment of precision medicine in small-scale locale study.

METHODS

This qualitative study utilized small group discussions, key informant interviews and review of secondary data. Thematic and case analysis were utilized by the researcher to analyze data as deemed and provided by the respondents.

RESULTS

Implementation has been challenged by the decentralized environment and the presence of a large private sector and politics, often creating fragmentation and variation in the quality of services across the country and groups. Results were based on political history and dynamics, municipal health budget, implementation of programs via the municipal or rural health unit and linkage between the municipal health sector and local government unit.

CONCLUSIONS

Politics play a major role in the healthcare delivery system. This may not speak for every municipality but in one way or another, as observed in this study, health financing and services are much dependent to those individuals that are in position and in authority.

ID: 15346 PIN: 28

REVIEW OF PRE-ANALYTICAL PHASE IN CLINICAL LABORATORY SETTING

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BACKGROUND-AIM

The ISO 15189:2012 Standard for laboratory accreditation defines certain standards and provides framework for the design and improvement of process based Quality Management Systems by Medical Laboratories. In this paper, I wish to discuss the standards, the Quality initiatives and the mechanisms in place to identify and mitigate these errors. The article also discusses three examples with completely different scenarios to enhance the author's viewpoint.

METHODS

My paper discusses in detail a KIMMS report (Key Incident Management and Monitoring report) issued by Royal College of Pathologists of Australasia is discussed in detail using graphs and tables. The paper also discusses 3 different scenarios of Pre-analytical errors that happened in our laboratory and how we captured those errors in time.

RESULTS

The KIMMS report indicates that the most commons errors from identification problems were related to Transfusion documentation (39.02%) and unlabelled samples (20.73%). The third most common error was from mismatch or discrepancy of ID (17.07%).The most common reasons for the samples getting rejected was "Specimen Not Collected" at 28 %. The second and third most common reasons were "samples clotted" at 55% and "samples haemolysed" at 52%. WA Health uses CIMS DATIX forms to record clinical incidents and the information collected is streamlined to a national database. Our laboratory has developed the WBIT - Wrong Blood In Tube Policy that involves;a)Manager's Checklist b) Error inquiry Checklist c)The Education Plan. Finally, i also discuss in the paper 3 case scenarios of Pre-analytical errors in our lab that i managed using the WBIT process above.

CONCLUSIONS

It is important that laboratories and other health care providers have adequate Quality Indicators within their Quality System Essentials to detect Pre-analytical errors in a timely manner. I also discussed an example of a KIMMS report in detail and highlighted how ZZ Error reporting is important to capture error data. These reports provide us the tools to understand Pre-analytical errors and develop appropriate mechanisms to prevent them from recurring.

ID: 15345 PIN: 280

DEVELOPING EFFICIENT CURRICULUM FOR HOSPITAL BASED TRAINING FOR MEDICAL TECHNOLOGIST STUDENTS

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BACKGROUND-AIM

To obtain a biomedical laboratory degree must be completed training course in the hospital in South Korea. In fact, there is a difference between what we learn at school and what we learn at the hospital. So we have reorganized curriculum that is suitable for short-term training course in hospital for medical technologists.

METHODS

Task Force Team (TFT) was organized by each laboratory staff for curriculum reorganization. Objectives of the training course was decided and the training book was revised. The contents of training book was set as the training schedule, the training goal, the principle and the exercise contents. The practitioners of each laboratory made the contents. The training schedule was decided to include only the necessary contents in accordance with the assigned course period. The goal of the training was designed to be included in the contents of the training. The contents of principle is to briefly describe the basic principles used in each laboratory. The contents of exercises were decided to be a question format. The contents were confirmed by each laboratory managers. After the training at each laboratory, students turn in the report based on the contents of exercises. After training course using the new training book, the degree of satisfaction with the practice was evaluated.

RESULTS

The medical technologists who working in the hospital have created the training book that can be learned at role of medical technologist, comprehension of clinical instruments, professional technique, application of quality control and precautions to be taken at work. After the revision of the curriculum, there was no significant increase in the satisfaction with course. (Independent t-test: p-value>0.05) But the students' satisfaction with the practice was high. The practitioner write the exercise book and have the responsibility of the training thereby improving the quality of overall training. The contents of question format led to the active participation of each student.

CONCLUSIONS

Hospital based training course is an important program for students who want to become medical technologist in the future. We will improve the contents and to create a more appropriate curriculum.

ID: 15364 PIN: 281

BLS STUDENT SURVEY ON THE STUDENT PERSPECTIVE AND THEIR PROFESSIONAL EXPECTATIONS

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BACKGROUND-AIM

In Sweden, approximately 10 000 biomedical laboratory scientists (BLS) hold a license to practice and about 6000 are employed in health care. Due to a high middle age in this group, many will retire in the next years to come and employers will have difficulties attracting personal to fill the gaps. From a recent report from the Swedish Universitetskanslerämbetet (UKÄ) it was also shown that despite an increase of the number of accepted students in the BLS-program, many students drop out from their university studies especially during their first year. In order to better understand the student perspective, the Swedish Institute of Biomedical Laboratory Science (IBL) performed a student survey to evaluate different aspects related to choice of education and expectations on future positions.

METHODS

All student members in IBL were invited to participate (n=483) and to spread the survey to student colleagues. The survey was sent as an online survey link (www. webenkater.com); open for participation for 10 days.

RESULTS

Of invited students, 268 participated. Most of the students were female (214, 80%), between 19 and 24 years (159, 59%). Eighty-three per cent (221) had BLS as their first choice when applying for university studies and top reasons for choosing BLS was a good job market (170, 65%), stimulating work tasks (153, 58%) and that the program was a good base for further studies/research (101, 38%). The majority of students found the program to be as difficult as expected (160, 61%) while 75 students (29%) found it harder than expected. Students were generally interested in further studies (167, 64%), many in pursuing a nationally regulated master if optional (139, 54%). The most important factor in a future employment for students were nice colleagues and working climate (182, 70%), followed by interesting working tasks (119, 46%), a high salary (114, 44%) and career opportunities (105, 40%). Almost half of the students (124, 48%) showed interest for working in health care.

CONCLUSIONS

Based on this survey, students find the profession attractive and many are interested in continuing with post-bachelor education. To attract students of today, employers need to offer interesting workplaces with a good social climate and career opportunities.

ID: 15368 PIN: 282

PERFORMANCE EVALUATION OF THE BS-120 AND BS-200E CHEMISTRY ANALYZER

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BACKGROUND-AIM

The prevalence of chronic diseases is growing due to aging population and westernized lifestyle habits in South Korea. Primary care enables continuous management of chronic diseases and even prevention of chronic diseases in healthy individuals, for which diagnostic tests play an important role. Primary care facilities generally use small pieces of equipment that can only handle a few tests, such as the Mindray BS-120 and BS-200E used in the present experiment, to manage chronic diseases and promote people's health. This study was conducted upon an understanding that performance assessments for small-size equipment have not been adequately performed.

METHODS

In this study, precision and cross-contamination rates were investigated based on the Clinical and Laboratory Standards Institute (CLSI) guidelines EP5-A3 and EP10-A3. Test categories were those included by the National Health Insurance Service (NHIS) in primary health diagnosis.

RESULTS

In the precision assessment, the total coefficients of variation (total %CV) for BS-120 and BS-200E were within 10.0%. Cross-contamination rate was within 1.0% for all items on BS-120 except for HDL-cholesterol, LDL-cholesterol, and triglyceride and for all items on BS-200E except for ALT, HDL-cholesterol, creatinine, and glucose.

CONCLUSIONS

Therefore, it is difficult to conclude that these two types of equipment have excellent performance, but improvements should be made to increase the reliability of the test results.

ID: 15378 PIN: 283

CORRELATIONAL ANALYSIS OF THE PROGRAM PROFILE FACTORS WITH THE ACQUISITION OF COGNITIVE, AFFECTIVE AND PSYCHOMOTOR SKILLS IN THE CLINICAL INTERNSHIP PROGRAM AMONG ACCREDITED MEDICAL INSTITUTIONS IN THE NATIONAL CAPITAL REGION, PHILIPPINES

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BACKGROUND-AIM

This research correlates the program profile factors with the acquisition of the cognitive, affective and psychomotor domains in the clinical internship program among Commission on Higher Education accredited Medical institutions in the National Capital Region. The research focused on five program factors; (a) orientation of the program (b) workload and practice (c) clinical instructor and supervision (d) extent of evaluation and (e) general resources of the Medical Technology/Medical Laboratory Science Internship Program

METHODS

This study utilized the descriptive correlational type of research. The research involved 107 Medical Technology/Medical Laboratory Science Interns, 52 faculty members, 16 clinical and anatomical pathologists as well as chief medical technologists from 11 different hospitals. The researcher adopted the validated questionnaire (Miller, 20009, Fitzgerald, Delitto, and Irrgang, 2007, cbahi.org, 2009, NACEP, 2009). Descriptive statistics such weighted means and frequency of the responses regarding the extent of implementation while multiple regression analysis on the effect program profile factors with the acquisition of cognitive, affective and psychomotor domain.

RESULTS

The study revealed a great extent in the five (5) program factors in terms of orientation, workload and practice, clinical instructor and supervision, evaluation and general resources while a very satisfactory rating in the level of effectiveness in the extent of acquisition of cognitive, affective and psychomotor in relation to communication skills, teamwork, initiative, technical knowledge, safety skills, and professional ethics while a satisfactory rating in relations to problem-solving/decision making skills and self-management. Moreover, the multiple regression analysis of the identified factors with the extent of acquisition of cognitive, affective and psychomotor skills in the clinical internship program revealed that only the workload and practice is significant and the rest of the variables were not.

CONCLUSIONS

The researchers conclude that the greater the extent of the variety of conditions will provide a useful learning, the better would be the acquisition of cognitive, affective and psychomotor skills in the clinical internship program.

ID: 15380 PIN: 284

CORRELATES OF THE MEDICAL TECHNOLOGY LICENSURE EXAMINATION, MOCK BOARD PROFICIENCY ASSESSMENT AND STUDENT'S ACADEMIC PERFORMANCE: A THREE YEAR DOCUMENTARY ANALYSIS

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BACKGROUND-AIM

The study was conducted to determine if the Student's Academic Performance (SAP) and Mock Board Proficiency Assessment (MBPA) correlates with the performance in the Medical Technology Licensure Examination (MTLE) as well as to determine significant predictive value for passing performance in the professional regulation commission rating. This research employed the cross-sectional study to all Medical Technology students of a selected higher education institution in the Philippines who graduated and passed the mock board as well as the licensure board exam in the year 2015 – 2017.

METHODS

A documentary analysis together with purposive sampling method was used in this study. The total population of the medical technology graduates who satisfied the criteria were included in this study. Analysis was done by using frequency and percentages, mean and standard deviation and Pearson Product Moment Correlation (or Pearson's r) and multiple regression to come up with linear regression equation.

RESULTS

It can be noted from the result of the study that the MBPA scores lower than the MTLE for the entire period of three years. Data also denotes that the mean scores for every year have an increase of eight (8) or more numerical values reaching the highest mean difference of 10.92 during the February 2017. The correlational analysis of the MTLE with the MBAP and SAP are determinants of the performance of the graduates in the MTLE using the Pearson or product-moment correlation.

CONCLUSIONS

Mock board proficiency assessment has positively correlated in the overall MTLE performance.

ID: 15402 PIN: 285

IMPROVING DIAGNOSIS: EDUCATING MLS STUDENTS FOR BETTER COMMUNICATION WITH CARE PROVIDERS

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BACKGROUND-AIM

The National Academy of Medicine report, Improving Diagnosis in Healthcare, emphasizes the importance of communication among professionals, particularly laboratory professionals and providers who order and interpret laboratory tests. Feedback on test utilization, interpretation, and follow-up is important in helping clinicians improve their use of laboratory testing in diagnosis. Communication with patients helps to establish patient-centered care. Although both interprofessional communication skills and patient-centered care are identified by the National Academy of Medicine as essential competencies for healthcare practitioners, Medical Laboratory Science (MLS) students and entry-level practitioners have little experience with professional communications and may be reluctant to engage in conversations with providers or patients.

METHODS

In graduate and undergraduate MLS programs, we assigned various types of laboratory-related communication, using a discussion board through the campus learning management system. This activity was initially included in a Hematology course and has also been used with content from other laboratory disciplines. Hypothetical questions related to course content from clinicians or patients were posted; students were then assigned to answer the questions, or to peer review other student entries. Rubrics were used to score student responses and peer reviews.

RESULTS

Examples of questions, responses, rubrics, and peer reviews are provided.

CONCLUSIONS

Students reported that this activity was helpful in preparing for clinician and patient interactions in an interprofessional community outreach program.

ID: 15392 PIN: 286

EVIDENCE FROM CONSULTATION DEFINES THE DIFFERENCE BETWEEN CLINICAL DOCTORATES AND THE PH.D. IN CLINICAL LABORATORY SCIENCE

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BACKGROUND-AIM

Since the inception of the doctorate in clinical laboratory science (CLS), American universities sponsoring the new profession have struggled with its academic placement. In the US higher education system, the Doctor of Philosophy (Ph.D.) is considered the highest achievement level and oriented toward research. Clinical (also practice) doctorates, are considered more applied though still at the doctoral level and classified as terminal degrees for many healthcare professions.

METHODS

Our US university, the first to offer a doctorate-level degree in CLS, opted to launch this new profession as a clinical doctorate, DCLS, conceiving the practice to be applied and patient/consumer focused.

RESULTS

During completion of the first DCLS curriculum, clear evidence emerged describing an additional curriculum needed to develop augmented competencies in clinical research equivalent to competencies traditionally associated with the Ph.D. During the DCLS residency year, the Consultation Model was implemented in four clinical settings: Consumer Information Response Team (CIRT, a national consultation network), Diagnostic Management Team (DMT, laboratory consultation), Patient Care Rounding Team (PCRT, inpatient clinical service consultation), and Utilization Review (UR, electronic health record, EHR, and laboratory information system, LIS, review consultation). In all settings, data were collected and analyzed on multiple variables including provider type, medical subject (diagnosis), diagnostic question, related testing cycle phase, related treatment phase (screen, monitor, diagnose), and complexity (number of hand-offs and/or logic steps). The results of these analyses clearly indicated the need for additional clinical research competencies, particularly data analytics associated with data warehouses built from EHR and LIS elements, needed to develop diagnostic algorithms supporting treatment paths within major diagnostic groups.

CONCLUSIONS

Development of this additional curriculum which will add these research competencies to the DCLS curriculum through research projects is underway; progression to completion will result in the award of the DCLS/Ph.D. Doctoral students will be accepted into either program but must demonstrate aptitude in clinical research to progress to the Ph.D. curriculum.

ID: 15408 PIN: 287

LEARNING OUTCOMES AND SELF-ASSESSMENT FOR 2ND AND 4TH SEMESTER BIOMEDICAL LABORATORY STUDENTS AT UNIVERSITY COLLEGE SOUTH DENMARK.

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BACKGROUND-AIM

Learning outcomes (LO) emphasize the application and integration of knowledge. LO at University College South Denmark's school of Medical Laboratory Science (UCSyd) articulate how students will be able to employ the material and methods, both in the context of the classroom and in a working laboratory environment. Second semester student's curriculum expand for a six-month period and is based on both theoretical and practical classes at University College South Denmark comprising 30 ECTS. Fourth semester students study through participating in mandatory internships at concerted Hospitals and at UCSyd corresponding to 14 and 16 ECTS, respectively.
LO are divided to fit the ECTS ratio between internship and school term but as they are interconnected it is important for students to see the connection between learning outcomes
Each semester is based on themes. For 2nd semester themes are liver-, kidney and hematological diseases. Themes for 4th semester are Cancer and lifestyle diseases.
To support the student's integration of knowledge into competence, different teaching methods have been used in school term period. Student reflection and self-assessment of their own competence could be a way to measure the impact of the teaching methods used.

METHODS

A retrospective questionnaire study combined with test-scores from final test from the specific semester.
Data collection is anonymized by using student numbers thus making it possible to compare with final test-scores.
The teaching methods mentioned in background are rated by the students in relation to the LO
Qualitative data are obtained through the questionnaire by making it possible for students to write comments to specific questions.

RESULTS

Results are presented in averages of the scores. Relevant self-assessment scores are compared to the final test score of the specific semester. In addition, the comparison of certain self-assessment aspects regarding both 2nd and 4th semester students are presented.
Total n for 2nd semester students = 32, total n for 4th semester =31
Response rate is calculated for both semesters.

CONCLUSIONS

The conclusions based on the results expected by the beginning of September 2018, will be premiered during IFBLS 2018 poster session.

ID: 15455 PIN: 288

STRENGTHENING THE LAB SCIENTIST WORKFORCE: INNOVATIVE EDUCATION PARTNERSHIP

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BACKGROUND-AIM

Memorial Sloan Kettering Cancer Center (MSKCC) developed a career advancement program with Marist College to address the shortage of licensed Clinical Laboratory Technologists in the New York City area. Senior leadership identified state licensure restrictions, program reduction, attrition and local competition as limitations in the employment pool.
The Laboratory Scholars Training Program enrolls employees to an accelerated program in a National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accredited program at Marist College leading to a first or second Bachelor of Science degree.

METHODS

Employees meeting MSK's criteria and Marist College's pre-requisite course requirements apply to the program. Applicants are screened, interviewed and selected by a committee of administrators, managers and Laboratory Medicine faculty. Salary, tuition and expenses are funded during the 12 month program.
Upon conferring of the Bachelor of Science degree, the scholars sit for the American Society for Clinical Pathology (ASCP), Medical Laboratory Scientist exam. Upon passing the generalist exam, scholars apply for New York State licensure as a Clinical Laboratory Technologist. Licensed employees are offered a position in Laboratory Medicine with a commitment back to the department.

RESULTS

The program was implemented in the spring of 2014. Three cohorts have completed the program with a 100% pass rate on the national certification exam, the fourth cohort is scheduled to graduate in August 2018 and the fifth cohort has been selected for 2018-2019.
The completion of pre-requisite courses prior to the start of the program remains to be the greatest obstacle to date.

CONCLUSIONS

The Department of Laboratory Medicine currently employs 22 full-time alumni of the Laboratory Scholars Training Program as licensed. Upon the completion of the fourth cohort an additional 8 scholars will be employed. The shortage of CLTs continues to restrict the institution's ability to fill vacancies while the demand at MSK is on pace to increase for the next 2-3 years.

ID: 14874 PIN: 289

POINT OF CARE TESTING (POCT) IN LANSPITALI - UNIVERSITY HOSPITAL REYKJAVIK

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BACKGROUND-AIM

Point Of Care Testing (POCT) refers to laboratory medicine testing in the immediate vicinity of the patient. This is a relatively recent development in laboratory medicine for measurements of various fluids, usually blood or urine. Evolving technological advances have enabled the development of novel POCT instruments and the number of possible measurements has been increasing, making it possible to perform measurements in a user friendly manner with results available rapidly. At the same time there have been increased requirements for accreditation according to the International Organization for Standardization (ISO). To be able to use results from POCT instruments to make clinical decisions, the results need to be reliable. This can only be done with an effective quality management system.

METHODS

In this study the arrangements regarding POCT at Landspítali was lookt at. The focus of the study was on how POCT management is organized, the status of quality issues and accreditation, what type of instruments are being used, how training is being organized and how daily POCT services are operated. An online survey among personnel performing POCT at the pediatric and intensive care departments at Landspítali was also performed. Questions regarding sampling, sample handling and measurement of quality controls were asked.

RESULTS

The result demonstrates the necessity of improving POCT practices at Landspitali and to establish a management system that encompasses all aspects of POCT. Only part of the instruments used for POCT at Landspitali is currently being supervised by laboratory medicine professionals or falls under the responsibility of the Department of clinical biochemistry. The online survey at Landspitali demonstrated a lack of knowledge by POCT operators regarding sampling for blood gases, handling of samples and measurements of quality controls. Results also showed a need for coordination of procedures for sampling, recording of results and training of operators in clinical departments in the use of POCT. Responsibilities for regular monitoring, organized training and daily services must be defined.

CONCLUSIONS

In conclusion, a policy for POCT at Landspítali needs restructuring and should be based on ISO standard 22870.

ID: 15385 PIN: 29

COMPARISON OF TWO METHODS OF BLOOD SAMPLING FROM THE ARTERIAL CANNULATION

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BACKGROUND-AIM

Blood sample collecting for patients admitted to the intensive care unit (ICU) might be time-consuming, with the quality of sampling limited by the occurrence of hemolysis, clotting and insufficient volume, leading to recollection. We planned to investigate if a vacuum sampling device was better than the conventional method regarding efficiency and quality.

METHODS

In September and October 2016, we performed a prospective observational study at three ICUs of a medical center in Taiwan. We measured and analyzed the operation time of blood sampling from arterial cannulation by the 17 participating nurses, who were randomized to use one of the two sampling methods: Vacuum device (Luer-lok adapter) and conventional syringe. We also analyzed inadequate samples and blood spill-overs. Statistical analyses included descriptive statistics, Mann-Whitney test, Kruskal-Wallis test and Spearman rank correlation coefficient.

RESULTS

During the study period, there were 529 valid observations of blood sampling out of 533 sessions. The sampling sites included 68%, 31% and 1% from brachial, radial, and dorsalis pedis arteries, respectively, and 353 (67%) were for arterial blood gas (ABG) analysis. Hemolysis of the sample was found in 6 sessions. The operation times were significantly shorter in vacuum groups than in conventional groups among almost all tube numbers and type combinations, including one tube (averaged 62 sec. vs. 52 sec, p= .015), one tube plus ABG (80 vs. 79, p= .016), two tubes (75 vs. 66 , p= .023), two tubes plus ABG (87 vs. 78, p< .001), and 3 tubes plus ABG (94 vs. 86, p= .030), while the operation time was similar for 3 tubes (81 vs. 76, p= .174). The incidences of hemolysis, coagulation, and blood spill over or leakage were similar.

CONCLUSIONS

The application of vacuum blood sample collection method provides more efficient practice for the ICU nurses, while maintaining the quality of blood samples, and therefore should be advocated.

ID: 14983 PIN: 290

METHOD COMPARISON FOR HBA1C

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BACKGROUND-AIM

• The glycated haemoglobin (or HbA1c) is a kind of haemoglobin which originates when too much glucose accumulates in the blood: by means of a non-enzymatic process, glucose binds to the haemoglobin contained in the erythrocites (which have a mean life of about 120 days), proportionally to the glycaemia. HbA1c is less effective than normal haemoglobin in transporting oxygen.
• The concentration of HbA1c is related to the mean glycaemia of the last 3 months, and an increase of one percent of HbA1c corresponds to an increase of mean glycaemia equal to 35 mg/dL

METHODS

When in our laboratory we have passed from determining HBA1C with HPLC to determining it with capillary electrophoresis, we have measured 48 samples with both the methods. We than report the statistical analysis, performer with Student T Test for unpaired data, which shows that there is not a statistically significant difference between the two methods that we have compared.

RESULTS

P value 0.4666
Mean ± SEM for HPLC 57.73 ± 2.947
Mean ± SEM for EC 54.79 ± 2.731
95 % confidence interval -10.92 to 5.041
R squared (eta squared) 0.005654

CONCLUSIONS

• Both the methods are sensitive, but in EC we have a better separation of the fractions of haemoglobin, allowing to determin the presence of anomalous fractions;
• Having instead fractions which are (for example HbS > 30 % or Hb F > 10 %) both the methods do not provide a quantitatively exact evaluation HbA1C;
• Triglycerides, cholesterol and bilirubin do not cause interferences;
• In HPLC elevated concentrations of aspirin and vitamin C can affect the correct elution and separation of the different fractions.

ID: 15008 PIN: 291

INCREASING THE INTERPRETABILITY OF EEG BY INTER-PROFESSIONAL COLLABORATIVE PRACTICE

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BACKGROUND-AIM

Background
EEG can record electrical activities generated by cell activities of the brain. As the action potential of electrical activities in the brain is rather low, EEG wave recordings are easily influenced by factors other than brain cell activities and hence increase the possibility of misinterpretation by physicians.
Objective
Members from different sub special fieids(including neurologists, a medical technologist, and a psychologist) was convened by the Associate Dean to assist the medical technologist in finding and eliminating causes of interferential waves in order to decrease the misinterpretation rate and increase the readability of EEG.

METHODS

1.Implementing TRM:leadership: the leader provided resources and put communication plans into practice, which facilitated team execution as well as assisted members and the team as the whole.
2.Mutual Support: Neurologists, the medical technologist, and the psychologist worked together during and outside working hours to complete tasks included in the quality control circle.
3.Shared Mental Model:In every meeting held, members from different sub special field discussed and shared difficulties faced and solutions from different fields'perspective.
4.A fishbone diagram was used to pinpoint potential causes of interferential waves, followed by a Pareto chart constructed to identify 20 percent of sources that caused 80 percent of the problems.

RESULTS

Strategy : The percentage of examinations interfered by background noise was 60% prior to the intervention, and reduced to 14% after;the percentage of patients falling asleep naturally was 40% before implementing the cross-taping method (taping upper and lower eyelids to reduce interferential potential caused by eye movements), 80% after the implementation, and 92% in examinations conducted in the post-study phase.

CONCLUSIONS

Participants who failed to enter sleep cycle were under conditions such as sleep disorders, dementia, unconsciousness, major depression, and movement disorders (limb twitching while sleeping).These are factors that could not be eliminated by our improvement strategy. In conclusion, the strategy implemented in this quality control circle has increased the interpretability of EEG and brought mutual benefits to patients, medical technologists, physicians as well as the hospital.

ID: 15053 PIN: 292

COMPARISON OF SCANNING QUALITY ON SLIDES COVERED WITH FILM OR GLASS

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BACKGROUND-AIM

The pathology department at Herlev and Gentofte Hospital have bought a couple of slide scanners (NanoZoomer, Hamamatsu), in an attempt to minimize physical archives of glasslides. According to the producer and supplier the scanner gives the best scanning results when slides are covered with glass instead of film. Since we use film routinely, and the film coverslipper from Sakura can cover 660 slides an hour compared to the glass coverslipper also from Sakura, which only covers 360 slides an hour, we decided to test this claim on 200 randomly chosen samples.

METHODS

Samples: 400 slides was sectioned from 200 randomly chosen blocks of several different tissue types, 2 serial sections was mounted on 2 slides. 1 slide was covered with film on Tissue-Tek® Film® Coverslipper and the other was covered with glass on Tissue-Tek® Glas™ g2.
Stains: Al sections was stained H & E on The Tissue-Tek® Prisma® (Sakura) and scanned on Nanozoomer 2.0-HT without prior cleaning of the slides.
Evaluation: All scans was evaluated by the author on a resolution of x20 and given a score (0 = scan cannot be evaluated, 1 = scan is poor, 2 = scan is acceptable and 3 = scan is optimal) according to quality of scan, how much of the section was clear and in focus.

RESULTS

The results are given as a percentage of how many slides covered with either film or glass scored 0 – 3. 18 slides had to be excluded do to missing slides of one of the cover methods, another 28 slides had to be excluded do to a possible oversight by the scanning personnel.
Of the remaining 354 slides, 74% covered with film scores 3 where only 65% of slides covered with glass get the optimal score. In the acceptable category the percentage was 26% for film and 32 for glass. Only glass covered slides scored 1 = poor, but only 2%, and one of the glass covered slides had not been scanned.
The artifacts that affected the scanning quality were air bubbles, folds in the section, but also the size of the section affected the scanning quality. Air bubbles was most frequent in slides covered with glass.

CONCLUSIONS

Based on the results of this study we can conclude that slides covered with film by Tissue-Tek® Film® Coverslipper gives better results compared to slides covered with glass by Tissue-Tek® Glas™ g2.

ID: 15066 PIN: 293

COMPARISION OF HEMOGLOBIN VALUES IN TWO ANALYZERS

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BACKGROUND-AIM

The main objective of any clinical laboratory is to carry out qualitative and quantitative measurementes with sufficient quality of the procedure. At present, automation is practically complete in our work system, which forces us to implement quality control systems that allow us to verify and correct errors in these procedures. As part of an integrated service in the general clinical laboratory, hematology laboratory is no an exception. It is responsable for implementeing quality systems that provide safety to technical personnel, reduce the possibility of errors and optimize the available resources.
The objective in this work is to evaluate the results obtained for the total hemoglobin concentration by different analytical systems, with the intention of reviewing the internal quality in our hematology laboratory.

METHODS

Hemoglobin results from a nineteen EDTA-K3 plasma cell samples without distinction of origin or study motif, were evaluated in two Roche Sysmex XN-9000 ™ Hematology Analyzer and, in parallel, were evaluated in six Siemens Advia 2120i Hematology System analyzers. Both analyzers are located in two different but interdependent hospital centers.
Statistical analysis of the results was carried out using the non-parametric Passing-Bablock regression method, using the MedCalc program.
The delay between the different determinations (first they were carried out in Sysmex equipment and, the last ones, in Advia) did not exceed six hours. In addition, the correct conservation of the samples was assured in their transfer. We did not evaluate the possible morphological alterations derived from this nor the biological variations of the magnitude studied, that seems to be satable until 12h at room termperature.

RESULTS

In the statistical analysis of hemoglobin values, it is obtained a correlation coefficient of 0.958 ($P < 0.0001$) and a regression line $y = -0.6872 + 1.0510x$, with a slope of 1.0510 [95% CI (0.9783 to 1.0678)] and an ordinate at the origin of -0.6872 [95% CI (-0.8585 to -0.0043)].

CONCLUSIONS

The confidence intervals of the slope include 1, while the intervals of the ordinate at the origin do not include 0, however, it is very close. So, it can be concluded that the hemoglobin results of both analyzers are practically interchangeable.

ID: 15086 PIN: 294

COMPLIANCE OF VENOUS BLOOD SAMPLING PROCEDURES WITH LOCAL GUIDELINES AT VARIOUS PRIMARY HEALTHCARE CENTERS AND HOSPITAL WARDS IN NORWAY: AN OBSERVATIONAL STUDY

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BACKGROUND-AIM

It is previously shown that 45-70% of all errors and deviations in analytical results in medical laboratories are related to blood sampling and preanalytic conditions. Both national and local guidelines have therefore been established to improve patient safety and to reduce errors. Previous studies have shown that compliance to established guidelines for venous blood sampling is low in Norway.

METHODS

A structured checklist including 28 items was created to assess the compliance of phlebotomy procedures with local guidelines. A risk occurrence chart of individual phlebotomy steps was created from the observed error frequency and severity of harm of each guideline. The severity of errors occurring during phlebotomy was graded using the risk occurrence chart.
Sampling was performed both on inpatient and outpatient wards and clinics, as well as at local doctor's offices, and both biomedical laboratory scientists and medical secretaries were observed.

RESULTS

102 observations were carried out, and the average error rate was 17.47%. The most critical findings concern patient identification, hand hygiene and whether the phlebotomist left the puncture site to remain disinfected after cleaning. No differences were found between health secretaries and biomedical laboratory scientists regarding these issues. A difference however, between in- and out-patients, was observed regarding question 12 in the checklist, "Does the puncture site remain disinfected after cleaning before puncturing?" Regarding this point, the phlebotomists in the outpatient clinic scored lower than the ones drawing blood from inpatients.

CONCLUSIONS

This study shows that the adherence to certain points in established guidelines and procedures are not adequacy followed,
No difference in compliance to guidelines between biomedical laboratory scientists and health secretaries was revealed in this study.
The most critical findings in this study concern patient identification, hand hygiene and whether the phlebotomists left the puncture site disinfected after cleaning or not.

ID: 15160 PIN: 295

SERUM ALANINE AMINOTRANSFERASE AND ASPARTATE AMINOTRANSFERASE MEASUREMENTS BY IFCC PRIMARY REFERENCE PROCEDURES AND SEVEN ROUTINE ASSAYS WITHOUT PYRIDOXAL-5'-PHOSPHATE: IS IT POSSIBLE THAT UNIFIED CORRECTION COEFFICIENT EXIST ?

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BACKGROUND-AIM

The mainstream reagents for serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) activity measurements in China are without pyridoxal-5'-phosphate (P5P). The IFCC primary reference procedures (PRPs) are recommended adding P5P for aminotransferase activity measurements. We evaluated seven routine assays without P5P to identify whether a unified correction coefficient exists between the IFCC PRPs and the assays without P5P.

METHODS

One hundred and four individual serum specimens ranged from 6 to 352 U/L for ALT and another 104 samples from 7 to 329 U/L for AST were selected at the Department of Laboratory Medicine of Beijing Hospital, Beijing Chaoyang Hospital and Beijing Tongren Hospital. All specimens were measured by IFCC PRPs as comparative method and seven routine assays without P5P on Hitachi 7180 analyzer as evaluated methods, including BioSino (BioSino Bio-Technology & Science, China), BSBE (Beijing Strong Biotechnologies, China), DiaSys (DiaSys Diagnostic Systems, German), KHB (Shanghai Kehua Bio-Engineering, China), LEADMAN (Beijing Leadman Biochemistry, China), MACCURA (Maccura Biotechnology, China) and Wako (Wako Pure Chemical Industries, Japan). The Ordinary Linear Regression (OLR) was used in analyzing slopes and intercepts with 95%CI of those sample level inside normal reference intervals (ALT<=60U/L or AST<=45U/L according to Chinses WS/T 404.1 Guideline), and the weighted OLR was performed for those analyte concentration outside normal reference intervals because of heteroscedasticity of data.

RESULTS

The coefficient of determination for ALT and AST measurement ranged from 0.966 to 0.988 and from 0.945 to 0.957, respectively. The OLR and weighted OLR slopes for ALT activity measurements varied from 0.85 to 0.97 and 0.86 to 0.98, as well as for AST activity measurements varied from 0.86 to 0.98 and 0.82 to 0.93. The OLR and weighted OLR intercepts for ALT ranged from -2.5 to 0.5 and -5.7 to 2.9; the calculated intercepts for AST ranged from -3.4 to 2.0 and -1.9 to -0.2.

CONCLUSIONS

The significantly varied slopes and intercepts illustrated slim possibility of unified correction coefficient existing between the IFCC PRPs and assays without P5P based on the collected samples in this study.

ID: 15190 PIN: 296

TEAM RESOURCE MANAGEMENT: THE ESTABLISHMENT OF “DUE TO MISUSE OF HEALTH INSURANCE CARD AND THE NEED TO CORRECT THE FLOW OF MEDICAL INFORMATION

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BACKGROUND-AIM

The National Health Insurance (NHI) program in Taiwan, launched in 1995, has successfully provided universal and quality healthcare to the people at affordable costs. but a small number of speculative people act cheaper for personal reasons and use other people’s IC card for medical treatment. The patient identification.The aim is to identify patients Correct identity, put an end to medical malpractice Team resource management : the establishment of “due to misuse of health insurance card and the need to correct the flow of medical information”, hoping to establish the correct process to provide more effective medical services.

METHODS

Team resource management bar chart Fishbone Diagram cause and effect diagrams Check Sheet

RESULTS

Save nearly half the time,(before:4~8hrs;after:0.8hr)The efforts of medical staff and proper operation and advocacy, the correct time for correct use of “accidental health insurance card incidents” can be saved, so as to win effective medical treatment time. This improvement program, combined with three levels of nursing, medical and administrative services, not only saves many unnecessary costs for the hospital, but also reduces the chances of mistaking the bottom line of regulations.

CONCLUSIONS

It also broke the long-existing gap between nursing units and medical units and indirectly increased the value of the entire medical care. Unexpected result The other participants It also deeply understands that the improved mode of thinking through organizational operation and quality control measures will greatly help to improve the units and units in the future and at the same time will have the absolute influence on the quality improvement of medical care.

ID: 15206 PIN: 297

FORMALIN PIGMENT IN NBF FIXATED PLACENTAL TISSUE A CHALLENGE IN DIAGNOSIS BASED ON TISSUE WITH UNKNOWN MALARIA INFECTION STATUS

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BACKGROUND-AIM

Formation of formalin pigment (FP) in placental tissue during fixation with neutral buffered formalin (NBF) can be challenging, when testing for Malaria infection.
Formalin pigment can be formed, if the formalin solution is not PH-neutral, if the fixation time is prolonged or if the tissue is blood-filled. Formalin pigments will show up as brown-black deposition.
The Malaria parasite Plasmodium can produce hemozoin when breaking down the hemoglobin of the erythrocyte. Hemozoin will like FP show up as brown-black deposition.
This poses an inherent problem with differential diagnostics when relying on hemozion formation in malaria infected placental tissue.
The purpose of this study is to establish how fast, how much and where formalin pigments are formed in placental tissue.

METHODS

We will use normal (Malaria free) placental tissue, supplied directly and unfixed from a Danish maternity ward. The tissue will undergo fixation of different duration (1 to 60 days) and in three different formalin resolutions (commercial/non-commercial and acidic formalin). The fixed tissue will then be proceeded in paraffin. Subsequently there will be cut sections for HE with or without pre-treatment (picric acid-ethanol solution which can dissolve formalin pigments). There will be made HE/cryo control sections of the tissue. All tissue will be microscoped in order to verify presence of pigmentation. The amount and distribution of the pigmentation will be recorded.

RESULTS

It is expected that: The amount of formalin pigment depends on the time in NBF.
The longer time the more formalin pigment will be formed. There will be formed more formalin pigment in acidic formalin than there will be in commercial/non-commercial NBF. The formalin pigment will form in any part of the placental tissue. Formalin pigment can be dissolved by treating the fixated tissue with picric acid-ethanol prior to HE staining.

CONCLUSIONS

There are strong indications towards the need for another method for diagnosis of malaria infection in placental tissue due to the inherent differential diagnosis problems caused by the formation of formalin pigment

ID: 15332 PIN: 298

CROSS IMPLEMENTATION OF MEDICAL LABORATORY QUALITY MANAGEMENT SYSTEM FROM CAP 15189 TO ISO 15189:2012: A CORRELATION ANALYSIS

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BACKGROUND-AIM

Accreditation plays a pivotal role in direct support of medical laboratory capacity to provide technically competent services. One of the accreditation bodies that offer an internationally-recognised scheme is the College of American Pathologists (CAP). The CAP offers the accreditation program of CAP 15189 to medical laboratories globally. CAP 15189 is comprehensive with robust credibility because it ensures its accredited facilities are meeting rigorous quality requirements. Recently, there is an emerging trend for medical laboratories to seek further accreditations to enhance recognition and professional status. One such scheme is ISO 15189:2012 produced by the International Organization for Standardization. Such dual accreditation is logical and practical, but it has marked managerial and technical challenges because the CAP is not a signatory to the International Laboratory Accreditation Cooperation mutual recognition arrangement. Efforts to obtain dual accreditation may result in the distribution of resources to meet conformance requirements (CRs) that are already implemented, thereby causing disruptions to processes that may lead to longer preparation and planning time. There is, therefore, a need to facilitate and coordinate the use of resources more effectively and efficiently.

METHODS

This paper offers an innovative way to optimise the dual accreditation preparation process at the preliminary level by determining the exact quantity of CAP 15189 CRs required, so that the equivalency of ISO 15189:2012 CRs may be established in future work.

RESULTS

The CAP 15189 accreditation common documents were quantitatively analysed using the technique of content analysis to elicit the CRs coverage as follows: the 'All common checklist' (n = 550), the 'Director assessment checklist' (n = 122) and the 'Laboratory general checklist' (n = 1 969). The quantitation process is the first step required to establish the relationship between the CRs of ISO 15189:2012 and those of CAP 15189, in order to further investigate the extent to which CRs overlap.

CONCLUSIONS

Overall, determining the exact CRs required for cross implementation from CAP 15189 to ISO 15189:2012 will highly likely enable accreditation related activities and tasks to become clearer and unequivocal.

ID: 15338 PIN: 299

CONFORMITY EVALUATION CHECKLISTS FOR API 20 E FOR ISO 15189:2012 INTERNAL AUDITING: AN OPTIMISATION TOOL FOR MEDICAL LABORATORIES

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BACKGROUND-AIM

The medical laboratory plays an important role in providing key diagnostic information relating to infectious conditions caused by pathogenic microorganisms. One way for medical laboratories to monitor whether the examination processes are running effectively is to conduct evaluations and audits internally on a regular and scheduled basis. However, the emergence of test kits that incorporate miniaturised biochemical reactions can increase the complexity of the design of work documents for conformity management purposes. The purpose of this study was to develop an applied tool based on conformance requirements (CRs) identified in ISO 15189:2012, an international standard published by the International Organization for Standardization, which can be used by internal auditors to audit the conformity status of the use of API 20 E. The objectives include the identification of relevant CRs in Clauses 4 and 5 of ISO 15189:2012 relating to areas of audit and the development of API 20 E conformity evaluation checklists.

METHODS

Relevant CRs were identified in Clauses 4 and 5 of ISO 15189:2012 by using the technique of content analysis.

RESULTS

The CRs were used as specific audit criteria for API 20 E conformity evaluation checklists for reagents, strips and reference equipment. Selected CRs (n = 22) in Clauses 4 and 5 of ISO 15189:2012 were used to develop API 20 E conformity evaluation checklists (n = 5) and an interpretation checklist (n = 1). The main advantage internal auditors gain by using such tools is the ability to produce documented assurance that medical laboratories use API 20 E routinely are competently meeting the relevant CRs specified in ISO 15189:2012.

CONCLUSIONS

The present study contributes to existing knowledge of conformity management by providing internal auditors a reasonably practical tool to conduct comprehensive and in depth assessments of conformity status of the use of API 20 E in accordance with ISO 15189:2012 in the areas of acceptance testings as well as equipment calibration and metrological traceability.

ID: 15227 PIN: 3

THE SCHEMA FOR OBTAINING BIOSAFETY FACTOR VIII COAGULATION

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BACKGROUND-AIM

The human blood is the source of range of medicinal products used for the prevention and treatment of variety diseases. In transfusion medicine many factors can affect the safety of blood donations.
The transmission of blood-borne viruses by plasma and purified plasma products is still considered to constitute a risk to patients despite measures such as donor selection, testing of donations and of plasma pools. The transmissions of viral agents may be associated with blood transfusion, including with the factor coagulation concentrates. Viral inactivation methods should be applied to all blood plasma-derived protein solutions.
Aims: choose the optimal stage of viral inactivation in the technology of obtaining the coagulation factor VIII (FVIII).

METHODS

adsorption/precipitation; dye-ligand affinity chromatography; ion-exchange chromatography on DEAE-Sepharose; methods of antiviral treatment (solvent-detergent and ammonium thiocyanate).

RESULTS

It is important to select the stage of viral inactivation followed by the removal of virus-inactivating substances in the process of obtaining FVIII.
The solvent-detergent method of viral inactivation can be used as a pre-stage of cryoprecipitation (virus-inactivating substances remain in the supernatant) and immediately before the ion-exchange chromatography step (solvent and detergent are not bound to the sorbent). Since viral inactivation NH4SCN was used at a concentration of 1.0 M, this stage should only be performed before cryoprecipitation.
The combination of the application of several methods of chemical viral inactivation due to the synergy of action improves the qualitative characteristics of concentrate of FVIII.
We proposed technological scheme for obtaining FVIII: plasma (FVIII – 0.017±0.001 IU/mg protein) – viral inactivation (solvent-detergent and NH4SCN) – cryoprecipitation (FVIII – 0.087±0.002 IU/mg protein) – adsorption/precipitation (FVIII – 0.091±0,001 IU/mg protein) – 0.3 M eluat NaCl, DEAE-Sepharose (FVIII –17.24±0.27 IU/mg protein) – eluat Diasorb-Procion Gelb M4R (FVIII – 35.96±0.99 IU/mg protein) ($P_{\delta}0.05$).

CONCLUSIONS

Received the virus inactivated FVIII with a degree of purification 499.44.

ID: 15400 PIN: 30

POINT-OF-CARE DETECTION OF HEMOLYSIS IN EMERGENCY CARE.

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BACKGROUND-AIM

The preanalytical phase is accountable for a vast majority of laboratory test errors. Among preanalytical errors, hemolysis is the most frequent error of sample reject. A new method, Helge (hemolysis level gauge equipment), for instant hemolysis detection was evaluated by health care staff at an emergency department. Helge, a single use hemolysis test is attached to the blood sample in direct conjunction to its filling and within 30 seconds reveals if the blood sample is hemolyzed or not.

METHODS

Patients who underwent blood sampling was eligible for enrollment in this study.
Minors and incomplete data from central laboratory were excluded (n. 57).
During 5 months 1671 patients (control group = 774, intervention group = 897) were non-consecutive included and randomized into one of two groups. Helge was utilized in the intervention group. Hemolyzed blood samples (>0,5 g/l hemoglobin) according to the new method were discarded until a new, negative, samples were collected and sent for analysis at central laboratory. Hemolysis index (HI) from Vitros 5.1 (Ortho Diagnostics Inc.) was extracted. Case report forms was filled in by participants regarding all samplings. Study protocol was approved by the regional ethical review board.

RESULTS

Samples hemolyzed at HI cutoff 50 (0,5 g/l hemoglobin): 12,3% (control group). 7,9% (intervention group). Samples hemolyzed at HI cutoff 100 (1 g/l hemoglobin in plasma): 4,4% (control group), 1,1% (intervention group). Material correlated to hemolysis: Peripheral intravenous catheter: 21,3%. Butterfly needle: 2,4%. Straight needle 1,6%. Hemolysis correlated to observed blood flow in blood sample: Slow blood flow: 35,9%, fast blood flow 15,7%, normal blood flow 8%. Nurses positive prediction value: 26%. Participants hemolysis rate varied in between 2,7% and 18,6%.

CONCLUSIONS

This new method could aid the phlebotomist in identifying hemolyzed samples direct to its filling. In this study, the observed difference between the intervention group and the control group was 75% lower at HI100 and 36% lower at HI50.

ID: 15347 PIN: 300

SETTING THE PARAMETERS OF THE MEDICAL LABORATORY SCIENCE EDUCATION AND TRAINING TOWARDS ASEAN STANDARDS: THE 2017 MANILA DECLARATION

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BACKGROUND-AIM

The Philippine Association of Schools in Medical Technology and Public Health (PASMETH) in preparation for the ASEAN Economic Integration in 2015 initiated the formation of the ASEAN Association of Schools of Medical Technology (AASMT) in 2011 and started to hold progressive summits annually geared towards standardization of education and practice among the AASMT member schools. In the 2017 50th anniversary of ASEAN in the Philippines, PASMETH convened the heads of the associations of schools and professionals from the ten-member states offering the program. The three-day summit aimed at harmonizing the medical technology towards MLS education and practice.

METHODS

PASMETH and the Philippine CHEd called for a summit among heads of MLS schools and officers of the professional associations during the 2017 ASEAN 50th anniversary celebration Active participation and proper documentation of the plenary lectures delivered by experts and country presentations during workshops and panel discussions were conducted.

RESULTS

The three-day summit gathered 150 MLS educators and laboratorians from ASEAN member states. Plenary lectures by experts discussed the ASEAN perspective of MLS education that is vital in harmonizing the MLS and PH education and practice in enhancing the quality of human resources in the region forming a regional identity. Both experts and participants drew from their own experiences, challenges and good practices abroad and shared how academic and professional exchanges can improve quality and competitiveness within ASEAN and beyond. The country reports during panel discussions stressed the need for harmonization amidst diversity and come up with mutual agreements to strengthen the profession. Thus, the 2017 Manila Declaration was drafted and signed by the 34 heads present.

CONCLUSIONS

The summit reported the mutual agreements in the areas of curriculum, research, community services and accreditation in the context of harmonizing the MLS education towards modern public health among institutions and organizations affiliated with the AASMT. These are embodied in the 2017 Manila Declaration.

ID: 15337 PIN: 301

CROSS IMPLEMENTATION OF MEDICAL LABORATORY QUALITY MANAGEMENT SYSTEM FROM CAP 15189 TO ISO 22870:2016: A CORRELATION ANALYSIS

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BACKGROUND-AIM

Quality management of point of care testing (POCT) has an important role in the maintenance of provision of diagnostic information. The College of American Pathologists (CAP) offers the accreditation program of CAP 15189 to support such a POCT quality management system. The CAP has published an accreditation program document, entitled 'Point of care testing checklist', to guide medical laboratories in fulfilling its POCT implementation by following the conformance requirement (CR) checklist requirements. Despite the successful CAP 15189 accreditation of medical laboratories globally, it remains unexplored exactly how many CRs there are for implementation purposes. There has been limited quantitative analysis of the CRs in the CAP's 'Point of care testing checklist'. This paper quantifies the CRs in the CAP's 'Point of care testing checklist' to support the applicability and auditability by medical laboratories. The results will also support medical laboratories that seek dual accreditation with ISO 22870:2016, an international standard published by the International Organization for Standardization.

METHODS

The CAP's 'Point of care testing checklist' was quantitatively analysed using the technique of content analysis to elicit the CRs coverage.

RESULTS

A total of 306/306 (100 %) CRs were identified. The CRs were concentrated in POC.09600 [23/306 (7.5 %) CRs] and POC.09600 and [31/306 (10.1 %) CRs]. The range was from 1/306 (0.3 %) CR in POC.03800, POC.04400, POC.07124, POC.07540, POC.08815, POC.09153 and POC.09160 to 31/306 (10.1 %) CRs in POC.06910. Overall, preliminary results indicate that the conformity management of POCT requires the medical laboratory to fulfil CRs of the CAP's 'Point of care testing checklist' (n = 306) in conjunction with CRs of two other documents published by the CAP for CAP 15189 accreditation assessment purposes: the 'All common checklist' and the 'Laboratory general checklist'.

CONCLUSIONS

The present study contributes to existing knowledge of CAP 15189 application by providing additional in depth insights into how the CAP's 'Point of care testing checklist' requires the medical laboratory to fulfil relevant CRs, with the possibility of providing direct support for cross-implementation from CAP 15189 to ISO 22870:2016 for dual accreditation.

ID: 15339 PIN: 302

MANAGEMENT REVIEW INPUT CHECKLIST FOR ISO 15189:2012 INTERNAL AUDITING: AN OPTIMISATION TOOL FOR MEDICAL LABORATORIES

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BACKGROUND-AIM

The pathology services industry constitutes a significant capability in the provision of diagnostic information for the diagnosis, monitoring and treatment of health conditions. The implementation of ISO 15189:2012, an international standard published by the International Organization for Standardization, requires innovative strategic quality management considerations for such operations. A well-structured strategic management process can support the medical laboratory in crafting strategy that aligns with the medical laboratory's capabilities and resources. While there is a strong linkage between the sufficiency of management review (MR) input and the effectiveness of MR performance, there has been no quantitative analytical tool, such as a conformance requirement (CR) checklist, available for internal auditors to evaluate the relevant MR input factors that constitute the main source of input for the ISO 15189:2012 MR process. This paper is primarily concerned with the optimisation of MR process in order to provide viable information to laboratory management for informed strategic decision making.

METHODS

The specific areas of interest for content analysis for the elicitation of CRs were primarily Subclause 4.15.2 (Review input) of ISO 15189:2012 and the associated cross referencing of Subclauses 4.6, 4.8, 4.9, 4.10, 4.11, 4.12, 4.14.2, 4.14.3, 4.14.4, 4.14.5, 4.14.6, 4.14.7, 4.14.8 and 5.6.3 of ISO 15189:2012. The results identified that Subclause 4.15.2 contained its own CRs (n = 25) as well as additional CRs from referred subclauses (n = 252).

RESULTS

The CRs were used as specific audit criteria for a CR checklist for Subclause 4.15.2 and an MR input checklist. The checklists enable the internal auditor to ensure comprehensive MR input results are included for evaluations by laboratory management. In order to obtain optimal productivity, the proposed checklists, the CR checklist for Subclause 4.15.2 and the MR input checklist, should be used by internal auditors who have been exposed to training in auditing against ISO 15189:2012 in accordance with ISO 19011:2011.

CONCLUSIONS

Overall, the use of the proposed checklists has the potential to enhance continual improvement and optimisation of the medical laboratory MR process.

ID: 15342 PIN: 303

DOCUMENT REVIEW CHECKLIST FOR INTERNAL AUDITING IN ACCORDANCE WITH THE CAP 15189 'POINT-OF-CARE-TESTING CHECKLIST': A TOOL TO SUPPORT CONFORMITY EVALUATION FOR MEDICAL LABORATORIES

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BACKGROUND-AIM

Medical laboratories add value to the delivery of health care by providing pathology information required for the diagnosis, monitoring and treatment of conditions. The College of American Pathologists (CAP) offers an accreditation program of CAP 15189 to support POCT quality management system and has published an accreditation program document, entitled 'Point of care testing checklist', to guide medical laboratories in their implementation of CAP 15189. The implementation process has the potential to pose administrative challenges caused by issues in the interpretation of the implementation of certain mandatory processes. One recommended method for laboratory management to ensure the quality management-related processes fulfil the relevant administrative requirements (ARs) is to conduct a comprehensive document review of all relevant documents on a regular basis. However, guidance on how to conduct such document review remains limited. The objective of this paper is to develop an applied tool based on the identified ARs in the CAP's 'Point of care testing checklist'.

METHODS

The CAP's 'Point of care testing checklist' was quantitatively analysed using the technique of content analysis to elicit the ARs.

RESULTS

Specific headings (n = 8) that are used to describe the ARs were used for the elicitation, including: 'Criteria', 'Instruction(s)', 'Limit(s)', 'List', 'Policy', 'Procedure', 'Program' and 'System'. A total of 24/24 (100 %) ARs were identified. The ARs were defined using international standards, such as the Institute of Electrical and Electronics Engineers, the International Electrotechnical Commission and the International Organization for Standardization, depending on the availability of definitions. The ARs checklist for the 'Point of care testing checklist' was developed based on the relationship between the headings (n = 8) and distribution of requirements in POC.03550 to POC.09700 (n = 22). The conformity status can be evaluated with the support of the interpretation table.

CONCLUSIONS

Overall, the proposed applied checklists offer a reasonably practical approach to supplement the document review process by enabling internal auditors to have an adequate scan of the medical laboratory quality management system.

ID: 15344 PIN: 304

VERIFIABILITY OPTIMISATION FOR ISO 22870:2016 CONFORMITY MANAGEMENT INTERNAL AUDITING: AN INTERVISIBILITY IMPROVEMENT TOOL FOR MEDICAL LABORATORIES

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BACKGROUND-AIM

The implementation of relevant quality management systems in medical laboratories remains a continual challenge for both laboratory management and medical laboratories. Recent advances in the field of quality management of point of care testing (POCT) have led medical laboratories to seek relevant accreditation schemes for their practices. One such accreditation scheme involves the implementation of ISO 22870:2016, an international standard published by the International Organization for Standardization. Despite its popularity for accreditation, there has been limited exploration into the optimisation of verifiability of conformance requirements (CRs) for conformity management. One way to improve the verifiability of CRs for evaluation and internal audit purposes is to clarify the descriptive terms in the form of either adjectives and adverbs that function as modifiers to CRs. This has the possibility of providing a degree of certainty for the interpretation of CRs. This paper identifies and quantifies the descriptive terms used in Clauses 4 and 5 of ISO 22870:2016 through content analysis with the intent of providing contributions to the ISO 22870:2016 auditability and maintainability.

METHODS

Selective descriptive terms (n = 11) were used for the mapping, including: 'All', 'Appropriate', 'Continual', 'Critical', 'Effective', 'Necessary', 'Periodic', 'Potential', 'Qualified', 'Specific' and 'Suitable'. The selection process was based on the availability of definitions relevant to either laboratory management or medical laboratory concerns.

RESULTS

The descriptive terms 'Appropriate' (n = 60) and 'Necessary' (n = 20) were the most frequently used terms. The overall range was from 10 to 60. The definitions of the descriptive terms were defined using international standards, such as the Institute of Electrical and Electronics Engineers and the International Organization for Standardization, depending on the availability of definitions.

CONCLUSIONS

The present study contributes to existing knowledge of ISO 22870:2016 evaluability and auditability by providing a reasonably practical approach to supplement the continual improvement process by enabling evaluators and internal auditors to have more consistent interpretations of CRs.

ID: 15393 PIN: 305

THE FIRST SWEDISH EXTERNAL QUALITY ASSESSMENT OF A LABORATORY TERMINOLOGY FOR GENERAL CLINICAL CHEMISTRY SCHEMES

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BACKGROUND-AIM

Safe and accurate transmission of patient laboratory data is imperative for the ongoing national and international digitization and E-health initiatives. The NPU-terminology (Nomenclature for Properties and Units) is an international clinical laboratory terminology which includes unique identifiers and definitions of examined properties. The clinical laboratories in Sweden are strongly encouraged and supported by the national release center to apply the terminology throughout the health care system, although it isn't mandatory. External quality assessment within clinical chemistry has so far mainly provided information to the laboratories on their results and performance when analyzing blind samples for various analytes. The definition of the analyses and examined properties becomes equally important since the rapid E-health development enables health care professional as well as patients, to read patient records regardless of health care provider.

METHODS

To provide the first ever assessment on the actual usage of the NPU-terminology for clinical chemistry analyses in Sweden today, we conducted a survey along with four different external quality assessment schemes. The laboratories were asked to report the NPU code that they utilize for the respective analyses. Four different schemes were selected, i.e., general clinical chemistry analyses in plasma, urine and dialysis solution as well as apolipoprotein analyses.

RESULTS

In total, the four schemes included 53 different analyses. The participation rate ranged between 28-50%. Completely harmonized code usage was seen for 33 of the analyses (62%). For the remaining analyses, the differences in NPU-code usage depended on application of different calibrators (9), reporting of results with different units (1) or wrong code usage (10). Reports of final results were provided to all participants, including individual reports with feedback to the laboratories that actively submitted their codes.

CONCLUSIONS

These results provide a first and unique view on how laboratory terminologies can be harmonized nationally by external quality assessment programs. We expect to develop these assessments further for additional areas within laboratory medicine to actively support a high quality and safe transmission of laboratory data.

ID: 14782 PIN: 306

HYPOVITAMINOSIS C AMONG WOMEN OF AFRICAN DESCENT WITH BREAST CANCER IN SOKOTO, NORTHWESTERN NIGERIA: CASE FOR POSSIBLE ASCORBIC ACID SUPPLEMENTATION IN BREAST CANCER IN DEVELOPING COUNTRIES

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BACKGROUND-AIM

In women, cancer of the breast is the most common neoplasm and cause of cancer-related death. An increasing number of women in Nigeria are affected with breast cancer. There is however paucity of data on ascorbic acid levels among women of African descent with breast cancer.

METHODS

We conducted a hospital based case- control study to examine the associations of vitamin with breast cancer. The study included a total of 46 breast cancer patients aged 18-70 years and mean age 42.91±5.83 years visiting the Specialist hospital, Sokoto. Total of and 46 age-matched apparently healthy women were monitored as controls. Venous blood was collected from the subjects and controls for estimation of vitamin C by a standard chemical method. Data were analyzed using SPSS 22.0 statistical package. Linear regression analysis was carried out to calculate correlation coefficient. A p-value δ0.05 was considered significant in all comparisons.

RESULTS

The mean value of ascorbic acid was significantly lower among breast cancer patients (0.44±0.02 mg/dl) compared to controls (1.98±0.21 mg/dl) (p=0.000). There was no statistically significant difference in the ascorbic acid among subjects based on whether they were on breast cancer treatment or naïve (0.43±0.04 vs 0.45±0.03) p=0.65. There was a statistically significant difference in the vitamin C levels of subjects based on stage of the disease (p=0.05).

CONCLUSIONS

Investigation and determination of ascorbic acid level should be taken as an essential tool in the investigation and management of breast cancer. Findings from this study may be a justification to routine prescribe ascorbic acid to women of African descent with breast cancer. More research should be carried out to investigate the pattern of other haematological parameters and biochemical parameters in breast cancer disease. There is need for more studies to determine the effect of dietary ascorbate supplementation on the development of breast tumours.

ID: 14828 PIN: 307

VARIATION OF LEUCOCYTES COUNTS AND INFLAMMATORY MARKERS AFTER 100-KM ULTRAMARATHON RUN

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BACKGROUND-AIM

Background: Acute strenuous exercise imposed paradoxically both enhancing and impairing effect on immunity, depending on the type and intensity of exercise. Excessive exposure to oxidative stress is known to cause lymphocytopenia and inflammation-like status in athletes during post-exercise period. However, these changes on immune systems in high-intensity exercise might be confused with severe sepsis-induced immunosuppression. The aim of this study is to examine the profile of leukocytes and inflammatory markers changes after 100-km ultramarathon run.

METHODS

Methods: Blood samples were collected from twenty-six recreational runners who finished a 100-km ultramarathon race. For each participant, the blood samples were collected at three different time points: (1) one week before race, (2) immediately following the race and (3) 24 hours after the race. Samples were analyzed white blood cells (WBCs), neutrophils, lymphocytes, monocytes, red distribute width (RDW), mean platelet volume(MPV), and plasma C-reaction protein(CRP) and procalcitonin (PCT) levels.

RESULTS

Results: The numbers of total WBCs, neutrophils and monocytes were found to be significantly elevated immediately after the race. Conversely, the values of lymphocytes exhibited a significant decrease compared to pre-race values. However, all changes on leucocytes profiles completely reversed 24 thereafter. Plasma CRP and PCT levels were significantly higher immediately after the race and persistent elevated 24 hours after the race. The RDW and MPV values had a less variation.

CONCLUSIONS

Conclusions: Ultramarathon is associated with a significant transient leucocytosis, neutrophila, monocytosis, and lymphopenia. Persistent elevated CRP and PCT levels, rather than RDW and MPV were common in ultramarathon runners. These results suggest that transient lymphocytopenia and high CRP and PCT levels can be a common variation seen in ultramathon runners.

ID: 14832 PIN: 308

ACCURACY OF CONTINUOUS AND NON-INVASIVE MEASUREMENT OF HEMOGLOBIN CONCENTRATION USING THE RADICAL-7 PULSE CO-OXIMETER DURING LAPAROSCOPY: AN OBSERVATIONAL STUDY

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BACKGROUND-AIM

The most common method for determining the hemoglobin concentration is to draw blood from a patient, but it needs several steps and leads to a time delay in emergency situation such as bleeding. The Radical-7 Pulse CO-Oximeter (Masimo Corporation, Irvine, CA) can noninvasively provide continuous hemoglobin concentration (SpHb) in real time. The elevated carbon dioxide pressure during laparoscopy can alter the wavelength reading of Pulse CO-Oximeter. The aim of this study was to compare noninvasive measurements of SpHb with simultaneous laboratory measurements of total hemoglobin in arterial blood samples (tHb) during laparoscopy.

METHODS

Twenty patients undergoing a laparoscopic surgery with general anesthesia were monitored with Pulse CO-Oximetry for SpHb. Arterial blood samples were analyzed using a laboratory CO-oximeter, and SpHb was simultaneously recorded. SpHb and tHb data were collected in condition of pneumoperitoneum. The SpHb measurements recorded when the perfusion index was < 1.0 were excluded from the analysis. Bias and precision were calculated.

RESULTS

A total of 40 data pairs (tHb/ SpHb) were analyzed in 20 patients. The tHb values ranged from 8.8 to 14.4 g/dL, and the SpHb values ranged from 8.2 to 14.3 g/dL. The bias (defined as the difference between SpHb and tHb) was -1.3 g/dL, and precision (defined as 1 standard deviation of the bias) was 1.91 g/dL. The mean value of end-tidal CO2 was 41 mmHg. There were 13 instances (32.5 %) when the absolute difference between SpHb and tHb was < 1.0 g/dL.

CONCLUSIONS

Continuous, noninvasive hemoglobin measurement via Pulse CO-Oximetry demonstrated accuracy of hemoglobin measurement more than 1 g/dL compared with a standard laboratory reference device in patients undergoing laparoscopic surgery. When implementing a SpHb monitoring during laparoscopy, it is needed to consider the effect of carbon dioxide on accuracy of SpHb.

ID: 14834 PIN: 309

EVIDENCE FOR EXERCISE INDUCED CARDIORENAL SYNDROMES IN 100-KM ULTRAMARATHON RUNNERS

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BACKGROUND-AIM

Background: Exercise-induced detrimental cardiac or renal injuries after extreme sports have been reported. These extreme races give temporary adverse effects on cardiovascular and renal parameters, accompanied with functional impact. Previous study indicated a weak significant correlation among the fluctuation of parameters represents for cardiac and renal system in marathon runners. Thus suggesting the malfunction of renal system might play a potential role to influence the level of cardiovascular biomarkers produced through the race.

METHODS

Methods: Blood samples were collected from twenty-six recreational runners who finished a 100-km ultramarathon race. For each participant, the blood samples were collected at three different time points: (1) one week before race, (2) immediately following the race and (3) 24 hours after the race. Samples were analyzed urea nitrogen, electrolytes, D-dimer, Creatinine, Creatine kinase, creatine-MB. Troponin I, and NT-proBNP.

RESULTS

Results: A diagnosis of AKI was made in 22 out of the 26 subjects (85%) immediately after the race; 4 subjects (15%) were determined to be in stage II AKI. We observed that the ratio of CCR level was gradually increased after 100-km ultramarathon with AKI. Concentration of aldosterone and NT-proBNP increased substantially after the race ($P<0.001$) but had quickly returned to pre-race level. There was a positive correlation between plasma aldosterone concentrations and NT-proBNP. There was no significance between both, however, a trend towards a significant correlation by time interaction ($r=0.37$, $p=0.06$). We investigated the associations of the NT-proBNP level with the D-dimer. The NT-proBNP level was positively associated but not significant with the D-dimer level($r=0.223$, $p=0.27$).

CONCLUSIONS

Conclusions: Traditional biomarkers showed low value in predicting heart failure or cardiovascular events, we compare the levels and kinetics of NT-proBNP in runners with different stages of AKI assessed by the variability of running speed during the race. We found exercise-induced AKI and the related biological reactions may simultaneously and inevitably put the runners in greater risk in developing cardiorenal syndrome and further cardiovascular damages

ID: 15406 PIN: 31

EFFECT OF BUZZY® ON A SELECTION OF CLINICAL CHEMISTRY AND HAEMATOLOGY TESTS

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BACKGROUND-AIM

The device Buzzy®, MMJ Labs, Atlanta, USA, is developed to relieve pain caused by needle piercing of the skin. The pain relieving effect is achieved using a combination of an external cooling ice pack and vibration which is produced by a vibrating motor in the Buzzy® device. The aim in this study is to compare the test results from a conventional venepuncture with a Buzzy®-assisted venepuncture and investigated whether the device has any effects on a selection of clinical chemistry and haematology tests.

METHODS

Blood was drawn from healthy volunteers using a standard venepuncture in one armpit and a Buzzy®-assisted venepuncture in the other armpit. The following clinical chemistry and haematology analysis were performed; P-Potassium (K), P-Lactate dehydrogenase (LDH), P-creatine kinase (CK), P-Thyroid stimulating hormone (TSH), B-Erythrocytes, count (RBC), B-Hematocrit (Hct), B-Hemoglobin (Hb), B-Leukocytes count (WBC), B-Lymphocytes, count, and B-Neutrophyles, count. To evaluate the effects of Buzzy® on test results bias plots were constructed. The maximum allowed bias was calculated according to method described by Fraser et al. in 1997, and the 95% confidence intervals (CI) of bias were calculated. A mean CV% for the conventional venepunctures and the Buzzy-assisted venepunctures was also calculated.

RESULTS

Blood was drawn from 58 volunteers 53 women and 5 men, aged 19 to 67 years.
The analytes: K, CK, TSH and Hct showed no statistically significant bias. The remaining analytes showed a statistically significant bias; however the 95% (CI) of bias were all below the maximum allowed bias.
The differences in mean CV% for the conventional venepunctures and the Buzzy®-assisted venepunctures were non-significant.

CONCLUSIONS

We found a minor effect using Buzzy® on some of the selected tests of clinical chemistry and haematology; however this was of no clinical significance.

ID: 14999 PIN: 310

THE CORRELATION ANALYSIS OF IONIZED CALCIUM DETECTION IN WHOLE BLOOD AND SERUM

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BACKGROUND-AIM

Calcium is the most abundant mineral in various tissues of the body. The maintenance of calcium is very important for in neural transmission, enzyme activity, myocardial function, coagulation and other intra- and extracellular functions. In the serum, about 55% of calcium as binding forms, 45% exhibits free status, is called ionized calcium. The ionized calcium is activity to physiological only. The ionized calcium increase levels in the systemic acidosis, but opposite effect is caused in alkalosis. Therefore, the ionized calcium detected is important in Emergency room. In the present study, we evaluate correlation the ionized calcium in whole blood and serum, if whole blood ionized calcium detection may instead of serum ionized calcium, we will get experiment reports faster.

METHODS

We included 100 patients in this study by Retroactive Statistics and GraphPad Prism. They received treatment in Emergency room. Their ionized calcium levels were detected by SIEMENS RapidLab1265, included whole blood (BD Vacutainer® Lithium Heparin) and serum (BD Vacutainer® SST) specimens. Data were expressed as mean±SD, and the ionized calcium correlation (p value) between whole blood and serum.

RESULTS

The ionized calcium mean±SD in whole blood were 4.609±0.470(mg/dL), and serum were 4.617±0.494(mg/dL), respectively. The ionized calcium in whole blood and serum are significant correlation ($p < 0.0001$).

CONCLUSIONS

The ionized calcium is obviously important in Emergency room. It need to be fast and accurate. Our hospital uses serum to detect ionized calcium now. The serum specimen needs more preparations than whole blood. The patient may receive appropriate treatment under fast and accurate diagnosis with whole blood ionized calcium detection instead of serum ionized calcium.

ID: 15002 PIN: 311

INVESTIGATION OF KEY FACTORS AFFECTING TURNAROUND TIME OF BIOCHEMISTRY TESTS FOR ED PATIENTS

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BACKGROUND-AIM

Turnaround time (TAT) is one of the most important indicators of laboratory performance, and delayed TAT always generates clinician complaints. In emergency department, physicians need to make clinical decision quickly for those patients in critical condition. Physicians rely on accurate laboratory test results for disease diagnosis and management guidance. Despite more than 99% of our stat tests are completed within 30 minutes from registration to report, the TAT that clinicians truly concern is the time from ordering to reporting. The aim of this study is to examine each time period throughout the entire workflow from ordering to reporting and to identify the key factors affecting TAT.

METHODS

We used the laboratory information system (LIS) to collect 47,718 stat biochemistry orders from 1, July to 31, December, 2017 in Taipei Veterans General Hospital. The stat samples were drawn by medical technologist (MT) or nursing staff (NS). We analyzed the percentage of tests completed within 60 minutes from ordering to reporting, and the 90th percentile turnaround time including order-to-phlebotomy time (T0), phlebotomy-to-registration time (T1), and registration-to-report time (T2) between these two groups.

RESULTS

The average percentages of tests completed within 60 minutes from ordering to reporting are 90.8% for overall, 93.9% for MT and 83.1% for NS. The 90th percentile will be used to analyze total TAT, T0, T1, and T2. Comparing achievement of MT and NS, the 90th percentile of total TAT was 54 and 72 minutes, T0 was 22 and 24 minutes, T1 was 17 and 33 minutes, and T2 was 21 and 22 minutes, respectively.

CONCLUSIONS

The main issue causing delayed TAT is collection of specimens by NS. In comparison of MT and NS, there is no significant difference in T0 and T2, however in T1, NS have spent almost twice the time than MT do. These results provide evidence that transportation time (T1) is the key factor affecting turnaround time of biochemistry tests for ED Patients.

ID: 15082 PIN: 312

LITHIUM INTOXICATIONS ATTENDED AT A SPANISH THIRD LEVEL HOSPITAL

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BACKGROUND-AIM

Introduction: Although lithium is considered the treatment of choice in bipolar disorder, its prescription has decreased in recent years due largely to the appearance of other mood stabilizers.
Acute poisoning from this drug is a potentially serious condition that must be known in order to start treatment as quickly as possible.
Objective:To detect acute poisonings by the analytical values in serum of the patients who have symptoms compatible with lithium poisoning and to classify them according to the degrees proposed by Hansen-Amdisen (1978) indicating the severity of this intoxication.

METHODS

Review of the clinical history of patients whose requested the determination of lithium during the year 2015. We established as a case, the patients who received lithium salts and had some sign of acute confusional symptoms.
The venous blood samples were obtained in vacuum tubes without anticoagulants. The samples were processed in Cobas 6000 e501 (Roche Dignostics) using the technique of end-point spectrometry with bichromatic reading.

RESULTS

From a total of 887 lithium determinations corresponding to 795 patients in chronic treatment (155 men and 640 women), 12 acute poisonings by lithium were identified. Patients were classified into 3 groups as established by Hansen-Amdisen.
-Group 1 (n=7). Li 1.5-2.5mmol/L. Patients with nausea, vomiting or muscle weakness. All these symptoms are compatible with mild intoxication and require a lithium dosage adjustment.
-Group 2 (n=3). Li 2.5-3.5mmol/L. These patients had symptoms of hypotension or stupor. The concentrations indicate moderate intoxication that needs volume expansion and pharmacological monitoring.
-Group 3 (n=2). Li>3.5 mmol/L. Severe poisonings need hemodialysis as treatment when patients have symptoms such as seizures, myoclonus or coma.

CONCLUSIONS

The determination of this drug is done routinely in most major laboratories because its a cheap technique that doesn't require additional procedures to be automated, but that provides very conclusive data to the clinical doctor for further diagnosis.
The majority of studies agree that lithium concentrations should be interpreted in the clinical-pathological context of the patient and not in isolation because they can lead to large errors.

ID: 15083 PIN: 313

INTOXICATIONS BY TRICYCLIC ANTIDEPRESSANTS AND THEIR CLINICAL CONSEQUENCES

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BACKGROUND-AIM

Introduction: Tricyclic antidepressants are used in multiple psychiatric disorders such as depressive syndrome or attention deficit hyperactivity disorder. Since 90's the prescription and poisoning by these drugs has decreased significantly by the introduction of selective serotonin reuptake inhibitors.
Acute intoxications by this drug if not treated in time, have a high mortality due to the cardiovascular effects that occur in the body.
Objective: Detect acute poisoning by tricyclic antidepressants with the analytical values in serum of patients who have symptoms compatible to establish treatment early.

METHODS

Review of the clinical history of patients whose laboratory tests requested the determination of tricyclic antidepressants during 2015. It was established as a case, the patients who in the urine drug screening test were positive for tricyclic antidepressants and had a compatible electrocardiogram.
Venous blood samples were obtained in vacuum tubes with lithium heparin anticoagulant. The samples were processed in Cobas 6000 e501 (Roche Dignostics) by the homogeneous enzyme immunoassay technique.

RESULTS

From a total of 33 determinations corresponding to 29 patients in chronic treatment (14 men and 15 women). 13 acute poisonings by tricyclic antidepressants were identified. The cut-off point for toxicity was 200ng/mL.
-Group 1 (n=5). Patients with mild clinical symptoms who presented disorientation or agitation and plasma concentrations between 200-300ng/mL.
-Group 2 (n=4). Plasma concentrations between 300-400ng/mL whose patients presented cardiac signs of moderate intoxication.
-Group 3 (n=4). These patients have a very severe clinical presentation with cardiac arrhythmias or conduction disorders that are the main cause of mortality, due to the plasma concentrations of these drugs> 400ng/mL.

CONCLUSIONS

The quantification of the plasma concentration of tricyclic antidepressants offers additional information to confirm the diagnosis but not for the urgent treatment of these intoxicates because the free concentration of the drug is modified with pH or the individual variability.
We must remember that many of these intoxications are associated with benzodiazepine poisoning, so treatment with flumazenil is contraindicated because it can produce convulsions.

ID: 15089 PIN: 314

INTOXICATIONS BY ACETAMINOPHEN IN ADULTS AND THEIR CLINICAL CHARACTERISTICS

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BACKGROUND-AIM

Introduction: Acetaminophen is one of the most used drugs for its analgesic and antipyretic properties, its high effectiveness and its low cost to treat fever and mild-moderate pain.
Acute poisonings by this drug are one of the most common causes of poisoning worldwide and in the United States it is the most frequent cause of acute liver failure.
Objective: Detect acute poisoning by paracetamol using the analytical values in serum of patients who have compatible symptoms or refer intentional abuse of this drug to be able to apply the corresponding antidote.

METHODS

Review of the clinical history of patients whose laboratory tests requested the determination of paracetamol during 2015. We established as a case the patients with gasometry values compatible with metabolic acidosis and digestive symptoms associated with the intentional consumption of drug.
Venous blood samples were obtained in vacuum tubes with lithium heparin anticoagulant. The samples were processed in Cobas Integra 400 plus (Roche Dignostics) by enzymatic method.

RESULTS

From a total of 71 determinations corresponding to 61 patients (30 men and 31 women). Only 3 acute poisonings by acetaminophen were identified, since the cut-off point for toxicity is set at>120∫g/mL.
-Women, 40 and 48 years old, initially presented nonspecific symptoms such as nausea and vomiting. The next day, they went to the Emergency Department due to upper digestive hemorrhage and metabolic acidosis was detected in the arterial blood gas in the laboratory. The plasma concentration of paracetamol was 185.10∫g/mL and 189.32∫g/mL.
-A 59-year-old woman goes to the Emergency Department for attempted suicide through massive drug ingestion. Presents signs of acute liver failure. The plasma concentration of paracetamol was 203.47∫g/mL. Supportive measures were applied with N-acetylcysteine as an antidote.

CONCLUSIONS

Conclusions: The quantification of the plasma concentration of paracetamol is very important to confirm the diagnosis of initial suspicion, minimizing clinical complications and establish the treatment as soon as possible.
We must remember that these intoxications produce hepatic necrosis that can be detected early in the laboratory by high levels of liver transaminases (AST and ALT) >1000IU/L, total bilirubin and high prothrombin time.

ID: 15157 PIN: 315

APPLICATION OF THE IMMATURE PLATELET FRACTION WITH FOR SEPSIS DIAGNOSIS AND SEVERITY OF SEPSIS IN THE EMERGENCY DEPARTMENTS

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BACKGROUND-AIM

Management of Sepsis would greatly benefit from the incorporation of simple and informative new biomarkers in clinical practice. An ideal sepsis biomarker should be able to segregate infected patients from other causes of SIRS, and also to allow some kind of risk stratification. Parameters such as the immature reticulocyte fraction (IRF) and immature platelet fraction (IPF) identify early signs of hematopoietic recovery, and have been studied in several inflammatory conditions. The aim of our study was to evaluate the performance of IRF and IPF as biomarkers of sepsis development and sepsis severity.

METHODS

This prospective observational study was conducted in the emergency department of 2000-bed Medical Center Hospital from December 2015 to October 2017. IPF and IRF were obtained using an automated hematologic analyzer (Sysmex XE5000) during the first 24 hours of hospitalization. In addition, C-reactive protein (CRP) and Procalcitonin (PCT) levels were tested in these patients.

RESULTS

In total, 32 patients with sepsis were enrolled in the study, of which 16 (50%) presented severe sepsis or septic shock and 50 non-sepsis patients made up the control group. Median IPF and IRF levels at admission were 7% (2.6% to 12.0%) and 16% (2.4 %to 40.1%) respectively, and were significantly higher than in a population of healthy individuals (IPF = 2.6% and IRF = 3.2%; both $P < 0.001$). However, when patients were stratified by the median SOFA score at admission, only the IPF was significantly higher in patients with SOFA $\varepsilon 6$ (IPF = 7.2% vs. 3.1%; $P = 0.05$). Similar results were observed when patients were stratified by the presence of severe sepsis. The IPF presented a significant correlation with PCT ($P < 0.005$)

CONCLUSIONS

IPF values obtained within 24 hours from emergency department are higher in patients with sepsis compared to healthy individuals, and correlate with sepsis severity scores. Measurement of the IPF is simple, and can be done as part of a CBC of some automated hematology analyzers could represent readily available and low-cost sepsis biomarkers. Therefore, our results confirm and extend a recent report of IPF in the emergency departments as an informative sepsis biomarker.

ID: 15180 PIN: 316

MENINGITIS CAUSED BY STREPTOCOCCUS PYOGENES

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BACKGROUND-AIM

Meningitis is an acute inflammation of the meninges. Meningitis caused by Streptococcus pyogenes (GAS) is rarely reported. GAS meningitis can cause neurological sequelae ranging from minor to major complications.

METHODS

Clinical case
A 71 year old female with a five day history of tonsillitis with increasing throat pain was found unresponsive in bed at home. She had a slightly stiff neck and clear fluid mixed with blood and pus coming out of her right ear, but no sign of head trauma.
The clinical diagnose was intracerebral infection caused by otitis media with perforation or mastoiditis.
During hospitalization she experienced difficulties with diplopia, handwriting, headaches and poor balance, but recovered well. When the patient was discharged after 12 days, she still had symptoms of otitis and intense tinnitus. Beta-trace protein test confirmed a CSF leakage.

RESULTS

Biochemical and microbiological examinations
Cerebrospinal fluid (CSF) was taken 3 hours after administration of antibiotics.
The CSF leucocyte cell count was 1009*10E6/L. Gram stain showed Gram positive cocci in chains. After 24 hours of incubation there was no growth on the agar plates. To confirm the Gram stain, the CSF was examined with 16s ribosomal RNA sequencing. The result of this was Streptococcus pyogenes.

CONCLUSIONS

Discussion and recommendation
In cases where antibiotics have been administered before spinal puncture is performed, it is important to be aware that the bacterial culture might be negative. In this case there were enough bacteria to be seen in a microscope. Streptococcus pyogenes would not have been detected with an automated Filmarray ME panel.
It is important to consider use of 16s RNA sequencing in patients presenting with symptoms of meningitis, where virus PCR and CSF culture are negative.

ID: 15205 PIN: 317

POINT OF CARE TESTING FOR INFLUENZA A AND B IN HOSPITAL EMERGENCY DEPARTMENTS

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BACKGROUND-AIM

Every winter pandemic Human influenza A and B (flu virus) poses health challenges and with potential deathly outcome.
Until recently, testing for Influenza has primarily been available in microbiology laboratories within the health care system. By moving the analysis to the hospitals' emergency department, the patient's infection status can be clarified upon admission. Patients who do not have influenza will not need expensive and cumbersome isolation rooms, and the hospitals' limited isolation room capacity can then be used only for the patients who have an actual need.

METHODS

We have used retrospective data looking at the consequences of having the Point of Care Test (POCT) "Alere™ i Influenza A & B" (Alere) available in the emergency department during the flu periods 2016 - 2017 and 2017 - 2018.
In case of suspected influenza, a nasopharynx test is taken from the patient. Nurses in the emergency department do the analyses. The test is an nicking endonuclease amplification reaction (NEAR) for the detection and differentiation of influenza virus A and influenza virus B. The method is isothermal and requires only 2 minutes hands-on time and the method takes a total of approximately 15 minutes.

RESULTS

Upon introduction of the method in 2016, it was verified against medical microbiological laboratory and their PCR method. Samples were taken from 74 patients, and were detected in 31% of the patients (23/74). There were 17 with influenza A, 5 with influenza B and 1 was PCR negative. The sensitivity was then 82.6% in Alere versus the sensitivity of PCR of 95.6%. Verification showed that by looking at CT value 32/33 is beyond the detection limit for Alere i.

CONCLUSIONS

Use of rapid testing to identify influenza in the emergency department clarifies infection status upon admission, and isolation rooms can then be used more efficiently. The number of isolation rooms will be reduced, saving the hospital operating costs.
Up to now, the cost using "Alere i" POCT test have been lower than using the PCR method in the microbiology laboratory.

ID: 15281 PIN: 318

ALERT REVISION OF CRITICAL BIOCHEMISTRY VALUES AT THE LABORATORY.

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BACKGROUND-AIM

Most of the results obtained in the laboratory do not require an urgent action, except for those of some parameters called critical values, that may indicate an alarming and potentially lethal situation. The clinical analyst must communicate the critical values to the medical doctors and general practicioners by telephone, registering it in the computer program according to protocol.
The aim is to analyze what were the most frequent parameters that have been warned during the last four months at our biochemistry laboratory.

METHODS

The study was carried out from October 2017 to January 2018, the laboratory data base was used and the total number and percentage of notifications were calculated according to the parameter. The following critical values wereestablished for each parameter: Alanineaminotransferase (ALT), Aspartate aminotransferase (AST), Calcium, Creatine kinase (CK), Creatinine, Gamma-glutamyltransferase (GGT), Glucose, Lipase, Magnesium, Phosphorus, Potassium, Sodium, Total Bilirubin (TBil), Urea and Uric acid.

RESULTS

A total of 690 alarms of critical values were recorded .The physician was reported in 228 (33.04%) alarms. In regard to our results, the percentage of alerts per parameter:
Potassium: 23.68%; Glucose: 15.79; Sodium: 10.53%; Urea: 8.77%; Lipase: 7.02%; Uric acid: 6.14%; GGT: 6.14%; Creatinine: 4.39; CK: 4.39%; ALT: 3.51%; AST: 3.51%; Calcium: 2.63%; Phosphorus: 1.76%;TBil: 0.88%; Magnesium: 0.88%.
A number of 462 alarms were not reported to the medical doctors(66.96%). Reasons were mainly because the patient had a prior critical value in that parameter or because doctors suspected that the patient has a critical value for his illness and were waiting for the confirmation.

CONCLUSIONS

The three most frequently reported critical values were potassium, glucose and sodium. Most of the potassium reported was due to hyperkalemia, however in the case of glucose and sodium, approximately 75% of cases were due to low values.
The establishment of a protocol for immediate notification of critical values is essential for a rapid action by the physician.
The registration of critical values alerts is also important for the process because they aremeasurable and allow to implement improvement strategies if necessary.

ID: 15351 PIN: 319

SYSTEMIC ANALYSIS THE BIOMARKERS OF BACTEREMIA IN PATIENTS WITH SYSTEMIC INFLAMMATORY RESPONSE SYNDROME

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BACKGROUND-AIM

Bacteremia is one of the most common disease that caused patient dead. In the last two decades, the scientist found many biomarkers were related to sepsis, but the diagnostic accuracy of these biomarkers remains unclear due to the lack of similar baselines among studies. In this study, we tried to analysis some biomarkers and compare non-infectious systemic inflammatory response syndrome patients as a control group.

METHODS

In this study, we collected 5494 patients' data from Jan.2017 to Jul.2017, and we collected the immature cell, CRP , PCT and blood culture data to analysis.

RESULTS

In this study, we found the percentage of immature cell ,CRP and PCT in two groups (non-infectious systemic inflammatory response syndrome patients and Systemic Inflammatory Response Syndrome patients) were 0.47%±0.32% V.S 8.43%± 2.17% , 1.93 mg/L±1.32 mg/L V.S 7.47 mg/L±3.42 mg/L and 2.16 ng/mL±0.74 ng/mL V.S 6.44±2.47 ng/mL. The area of immature cell ,CRP and PCT under the receiver operation characteristic curves were 0.91, 0.89 and 0.75.

CONCLUSIONS

According to our study, thanks to medical technology developed, we can use the auto-machine to examine directly, that's to say, once we test the CBC/DC , we can diagnosis the bacteremia in patients with Systemic Inflammatory Response Syndrome quickly. In traditional, we had to see the smear then check the immature cell, but we don't do that if we have a great auto-machine.

ID: 14920 PIN: 32

CO-INFECTION OF POLYOMAVIRUSES WITH CYTOMEGALOVIRUS AND EPSTEIN-BARR VIRUS IN ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANT RECIPIENTS – THE FIRST SURVEILLANCE STUDY FROM CROATIA

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BACKGROUND-AIM

Viral co-infections have been noted to decrease the patient's response to antiviral treatment, result in more severe infection and increase the risk of mortality in allogeneic hematopoietic stem cell transplantation (allo-HSCT) recipients. This is the first study from Croatia investigating the simultaneous presence of BK and JC polyomaviruses (BKV, JCV) with cytomegalovirus (CMV) and Epstein-Barr virus (EBV) in these patients.

METHODS

During the year 2015 at the University Hospital Centre Zagreb, urine and blood samples of patients after allo-HSCT suspected of having haemorrhagic cystitis (HC) were examined for the presence of BKV/JCV by real-time PCR assay (LightMix Kit, TIB MOLBIOL, Berlin, Germany). Monitoring for CMV and EBV was done (LightMix Kit, TIB MOLBIOL and COBAS AmpliPrep/COBAS Taqman CMV, Roche) from plasma and whole blood samples, respectively.

RESULTS

Total of 16 patients were enrolled. The median age was 39.5 years. The predominant underlying diseases were acute myelogenous (7/16, 43.8%) and acute lymphatic leukemia (4/16, 25%). The median time between the date of transplant and the first BKV/JCV positive sample was 27 days. BKV was positive in 6 out of 16 patients (37.5%). Four out of 6 (66.7%) BKV positive patients received treatment either with ciprofloxacin or immunoglobulins or both. JC virus was detected in 2 out of 16 (6.25%) patients and they received treatment for HC with a subsequent viral load decrease. Seven out of 8 (87.5%) BK/JC positive patients were also CMV DNA positive. One out of 8 (12.5%) BKV/JC positive patients has EBV DNA load higher than 1000 cp/mL but only in one sample. Graft versus host disease (GvHD) was diagnosed in 5 out of 8 (62.5%) BKV/JC positive patients. Four out of 5 (80%) of them had polyomavirus/CMV co-infection.

CONCLUSIONS

The first surveillance study from Croatia showed that CMV/polyomavirus co-infection was the major type of viral co-infection. The data regarding BK/JC polyomavirus infection were comparable to other studies regarding patients' age, underlying diseases, transplantation type, conditioning regimens, presence of GVHD and time till the first positive sample. Our results emphasize the importance of current practice on monitoring of viral infection in allo-HSCT recipients

ID: 15404 PIN: 320

COMPARISON OF TWO HANDHELD PUPILLOMETERS

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BACKGROUND-AIM

The pupillary light reflex (PLR) are controlled by, and thus mimic the condition of the autonomic nervous system and have been proven as valid biomarkers of neurological injuries.
Handheld pupillometers are now commercial available and might be a future tool for biomedical laboratory scientists working in emergency and intensive care units. We aimed this study to compare the performance of two handheld pupillometers.

METHODS

The PLR was measured in healthy volunteers by the use of PLR™-3000 from NeurOptics, USA and NeuroLight® from IDMed, France in a darkened room (0.4 lux). Each participant was measured six times alternating between the pupillometers with a period of 2 minutes dark adaption between each.
We compared maximum pupil size and after light stimulus: minimum pupil size, latency and maximum constriction velocity. We also compared precision (CV%), number of failed measurements and user friendliness.

RESULTS

PLR were measured in 18 men and 34 women, aged 19 to 56 years.
The average maximum pupil size were 6.8 mm and 7.2 mm with average CV% of 1.6 (range 0.0-7.8) and 2.0 (range 0.0-5.6) measured by PLR™-3000 and NeuroLight®, respectively. The average minimum pupil size were accordingly 4.1 mm and 4.0 mm with average CV% of 4.1 (range 1.2-19.3) and 4.1 (range 0.5-10.3), with average latencies of 0.22 sec. and 0.238 sec with average CV% of 4,5 (range 0-20.0) and 5.4 (range 0-24.0). Maximum constriction velocities were 4.9 mm/s and 5.2 mm/s with average CV% of 5,1 (range 0,7-15,5) and 7,2 (0,9-19,8), respectively.
Average differences with 95% intervals of confidence showed statistically significant difference in all measurements. NeuroLight® showed higher resolution of latency, probably due to a higher number of pictures per second compared to PLR™-3000.
The proportion of failed measurements were 7% with PLR™-3000 and 17% with NeuroLight®, χ^2-test: p=0.006. The user friendliness was rated highest with PLR™-3000.

CONCLUSIONS

Both pupillometers performed well and seems suited for measuring PLR. The users favored PLR™-3000 over NeuroLight®, to a minor extend, due to fewer failed measurements and higher user friendliness. However, further investigations of the accuracy are needed to fully describe the differences in performance of the two pupillometers.

ID: 15283 PIN: 321

SELECT ION FLOW TUBE MASS SPECTROMETRY (SIFT-MS) TO REAL TIME MONITORING OF EXHALED BREATH VOLATILE ORGANIC COMPOUNDS (VOCS) IN CANCER PATIENTS. A FEASIBILITY STUDY.

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BACKGROUND-AIM

The VOCs in the exhaled breath represent promising metabolomic biomarkers able to give useful information on the physio-pathological status of the individual. Real-time breath analysis of VOCs is an attractive non-invasive approach for cancer disease diagnosis and monitoring. Here we report the feasibility study of the use of SIFT-MS to measure targeted breath VOCs suitable to monitoring cancer patients in a clinical setting.

METHODS

Quantitative real-time analysis of 32 targeted VOCs has been performed with SIFT-MS Voice 200UltraTM instrument. Besides ammonia, acetone, isoprene, acetonitrile and dimethyl ether (n=5) the panel included: aliphatic alcohols (n=5, C1-C5), cyanuric acid (n=1), low chain aliphatic acids and their corresponding aldehydes (n=12, C1-C6) including aromatic benzaldehyde (n=1), surfer ethers (n=5) and phenol compounds (n=3).The study population consisted of patients with different cancer diseases(n=25) and a control of healthy individuals (n=12). For cancer patients, breath VOCs profile was measured at baseline and after the chemotherapy.

RESULTS

The VOCs detected and quantified in the breath coverage the 65% of the VOCs present in the targeted panel. The detection limit for each VOCs was of 1 ppb while precision was within 5-15% range. The intra-day variation of the individual VOCs profiles results lower than <25% for most of the VOCs investigated. As compared to healthy group cancer patients present significative lower breath level of ammonia ($p<0.005$), acetone ($p<0.05$), carbon disulfide ($p<0.00001$) and phenol ($p<0.05$) evaluated by t-test. Within the series investigated was possible to recognize qualitative and quantitative individual VOCs signatures for both cancer patients and healthy individuals. Specific VOCs signature associated with the disease progression was observed in a case of a patient with sarcoma.

CONCLUSIONS

The use of SIFT-MS resulted in a feasible and appropriate approach for the quali- e quantitative real-time analysis of a discrete number of VOCs present in the exhaled breath of cancer patients. The SIFT-MS may represent an interesting potential approach to fast and easy monitoring the day to day variation of the cancer patient's disease conditions along with their therapeutic journey.

ID: 14881 PIN: 322

TO DEVELOP A METHOD TO EXAMINE GHB(©-HYDROXYBUTYRIC ACID) SEIZED BY THE LAW ENFORCEMENT DEPARTMENT IN SOUTHERN TAIWAN

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BACKGROUND-AIM

GHB (Gamma hydroxybutyric acid) is a kind of natural substance found in the central nervous system and 95 percent of it is metabolized by the liver. In Taiwan, it is called
"Fairy Water" and is labeled as a Schedule 2 controlled drug. As a colorless, tasteless, transparent liquid, it is able to dissolve in water or beverages, which results in its being one of the notorious date rape drugs. When abused, it is often mixed with alcohol, Amphetamine, Ecstasy, and Heroin to enhance pleasure and relieve the side effects.

METHODS

1.Take 100 ㎕ of alleged Gamma-hydroxybutyric acid(GHB) liquid sample to analyze.
2.MSTFA derivation: Take 2 ml or proper amount of sample again whether Gamma-Butyrolactone(GBL) is found in TIC and GC/mass or not. Add 200ul 0.5N HCL or 2N KOH to acidify or alkalize, and add 6 ml(or proportional)ethyl acetate and shake them up on a rotor. Take the organic phase and dry it with TurboVap® LV. Derive it with MSTFA at 70 degrees for 20 minutes, and then analyze it. Identify its quality. Needless to estimate recovery rate.

RESULTS

The best instrument condition for analysis of GHB is as follows: 1㎕ of sample volume; cylinder(DB-5MS) 30ml x 0.25mm; helium; flow speed 1.0mL/min; splitless pattern chosen; syringe(Inlet) temperature 210°C; detector(AUX): 280°C; oven temperature and time of analysis: keeping initial temperature at 90°C for one minute and keeping the temperature rise at the rate of 25°C/min until it reached 280°C for 5 minutes Runtime 13.60 (full scan).

CONCLUSIONS

The examining method of our laboratory is carried out with Agilent6890N/5973N and full scan to examine GHB rapidly and precisely, with the Limit of Detection(LOD) being 300 ng/ml. This research is able to assist the government's seizure of drugs in order to eradicate the spread of emerging drugs and maintain the health and well-being of citizens around Taiwan.

ID: 14950 PIN: 323

QUANTITATION OF URINARY CREATINE AND GUANIDINOACETATE BY LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY

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BACKGROUND-AIM

Creatine, synthesized from guanidinoacetate (GAA), plays a critical role in cellular energy metabolism. Creatine deficiency in central nervous system leads to neurological impairment and may play a role in autism neurobiology. In this study, we aimed to establish an isotope dilution liquid chromatography-tandem mass spectrometry (LC-MS/MS) method to quantitate creatine and GAA in urine.

METHODS

d_3-Creatine and $^{13}C_2$-GAA were used as internal standards. Samples diluted 50-fold were mixed with acetonitrile containing internal standards. After centrifugation, the supernatants were dried with nitrogen gas and derivatized with HCl-butanol at 65°C for 15 minutes. Creatine and GAA were separated over a reversed-phase C18 column (2.1*50 mm) with 3.5 ⌠m particles. The mobile phase included 5 mM ammonium acetate plus 0.03% formic acid and 0.03% formic acid in acetonitrile. The flow rate was 0.2 mL/min and the total analysis period was 3 minutes.

RESULTS

Positive multiple reaction monitoring mode of triple quadrupole tandem mass spectrometry was carried out with 188.0>90.0 for creatine and 174.0>100.6 for GAA. Linear response was found from 0.5 to 10 ⌠M for creatine and 0.25 to 5 ⌠M for GAA (r2>0.999). The imprecisions (CV%) were less than 8% (n=10) with the mean recovery of 93~108% (n=3).

CONCLUSIONS

To sum up, the method for measuring urinary creatine and GAA by LC-MS/MS was established and could be applied to screen for creatine deficeiency.

ID: 14994 PIN: 324

ANALYSIS OF ®-LACTAMASE PRODUCED BY VARIOUS SPECIES OF DRUG-RESISTANT BACTERIA USING A MALDI BIOTYPER

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BACKGROUND-AIM

Drug-resistant bacteria, particularly those expressing extended-spectrum ®-lactamases (ESBL), are a major challenge of modern medicine. Here, we attempted to use STAR-BL, a new type of MALDI Biotyper (Bruker Daltonics), to detect these ®-lactamases.

METHODS

Enterobacteriaceae, Pseudomonas aeruginosa, and Haemophilus influenzae strains were evaluated in this study. Drug sensitivity testing was carried out using a MicroScan Neg MIC Panel 1J, and drug-resistance bacteria were identified using a MicroScan Neg MIC Panel 3.31E, KB disk, ESBL-cefotaxime (CTX)/clavulanic acid (CVA) assays, and metallo-®-lactamase SMA assays. Resistance genes were identified by polymerase chain reaction. The abilities of bacterial strains to hydrolyze ampicillin (ABPC), piperacillin (PIPC), CTX, ceftazidime (CAZ), meropenem (MEPM), and ertapenem (ETPM) were evaluated. ®-Lactamases were differentiated based on their ability to hydrolyze antibiotics. Differentiation between ESBL and AmpC was achieved by comparing changes in the ability to hydrolyze CTX in the presence of 200 ⌈g/mL CVA.

RESULTS

Of 53 strains of Enterobacteriaceae and P. aeruginosa, the rates of concordance were as follows: ABPC, 49 strains (92.5%); PIPC, 51 strains (96.2%); CTX, 53 strains (100%); CAZ, 42 strains (79.2%); MEPM, 53 strains (100%); and ETPM, 53 strains (100%). For CAZ, which had a low concordance rate, the sensitivity was 91.3%, and the specificity was 71.4%. Notably, all 38 ESBL strains were inhibited by CVA. Conversely, of the four strains of AmpC tested for inhibition by CVA, two strains (50%) were not inhibited, and two strains (50%) showed slight inhibition. However, differentiation was possible using logRQ scores. For H. influenzae BLPAR and BLPACR, which produced ®-lactamase, CTX, ABPC, and PIPC were hydrolyzed. In contrast, for BLNAR, which did not produce ®-lactamase, none of the drugs were hydrolyzed.

CONCLUSIONS

STAR-BL was able to detect various ®-lactamases produced by drug-resistant bacteria and a non-Enterobacteriaceae species of bacteria (H. influenzae). The test required only 3 h, making it useful as a rapid method for drug-resistant bacteria detection.

ID: 15026 PIN: 325

INTOXICATIONS BY HEAVY METALS IN PATIENTS WITH HIP ARTHROPLASTIES

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BACKGROUND-AIM

Introduction.- Total hip arthroplasties are the most frequent surgeries in patients with advanced age. In some cases, the appearance of metallic debris in routine analytical serum can be an indicator of the beginning of the wear of a prosthesis, although not always this presence means that the implant does not work correctly.
Objective.- To detect the patients who have inflammatory joint symptoms if in their serum appear heavy metals in the toxicity range.

METHODS

19 patients aged between 36-78 years who presented pain or infection in hip prosthesis and were classified according to its composition: cobalt, chromium and titanium. Several trace elements were determined in some patients.
The samples were centrifuged at 10,000 rpm for 10 minutes, separated and frozen at -80ºC until processed. Trace elements were all analysed with reference method: induced coupling plasma mass spectrometry (ICP-MS).

RESULTS

Differentiate 3 groups according to the trace element that we are going to analyse. Each of them has its own reference limit for toxicity.
-Titanium (n=6). One patient had 18∫g/L which is indicative of prosthetic deterioration and confirmed the clinical suspicion.
-Cobalt (n=5). The patient with concentrations of 27∫g/L was operated urgently for a prosthetic replacement and followed up with routine analytical controls.
-Chrome (n=15). There are several patients with worn prostheses that need controls because the concentrations are between 1.2∫g/L-4.4∫g/L.

CONCLUSIONS

The heavy metals concentrations should not be used in isolation, they must be interpreted in the context of the complete clinical problem and the determination of these elements is difficult because the detection technique has a high cost and not always available in the clinical environment, which sometimes implies a delay in the diagnosis of the patient.

ID: 15090 PIN: 326

USE LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY TO QUANTITATIVE UNBOUND/TOTAL PLASMA VORICONAZOLE CONCERTRATION IN THERAPEUTIC DRUG MONITORING

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BACKGROUND-AIM

Voriconazole is a common antifungal drug by treating or preventing patients with invasive aspergillosis , especially in Hematopoietic stem cell transplantation for patients . Voriconazole has a narrow therapeutic index and a large intra- and inter-individual pharmacokinetics (PK) variability. In clinical trial , High total voriconazole concertration has positive correlation with abnormal liver fuction and visual impairment. We also use fomula to adjust total voriconazole concertration in the hypoalbuminemia patients. So the Therapeutic Drug Monitoring is important for patient adusting the dose to prevent liver abornal. In this study, we intended to establish liquid chromatography tandem mass spectrometry method for clinical diagnostic purpose.

METHODS

By using electrospray ionization in the positive mode, the following mass transitions of voriconazole was 350.3□172.4. The internal standard, a ketocozole, was used for the calibration and basis of quantitative measurement. The mass transitions of ketocozole was 531.1□82.1. We also use High-throughput equilibrium dialysis method to quantitative analysis of unbound voriconazole concertration.

RESULTS

According to the preliminary results, the intra and inter-run precisions of the method were 6.2% and 9.9%, respectively. The total coefficient of variation (n=16) was 5.9% for a low-concentration spike (1⌠g/mL), 3.7% for a medium-concentration pool (6⌠g/mL), and 2.5% for a high-concentration pool (10⌠g/mL).The correlation between laboratories (MMH and UMC Utrecht) was 0.998.

CONCLUSIONS

The developed LC-MS/MS method for unbound/total voriconazole concertration determination is specific, sensitive, validated, and accurate. The method is applicable and a great benefit particularly to the patients from clinical department when therapeutic drug monitoring is used. We also met with clinical department periodically (4 times a year).This method is feasible and can be applied for clinical diagnostic services.

ID: 15094 PIN: 327

AN EVALUATION ON NICOTINE ABSORPTION AND LUNG CANCER RISK UTILIZING SERUM COTININE AND POLYCYCLIC AROMATIC HYDROCARBON - NAPHTHALENE AMONG CLASSIC FILIPINO CIGARETTE SMOKERS AND E-CIGARETTE USERS

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BACKGROUND-AIM

Cigarette smoking is one of the leading vices globally (WHO, 2015). Moreover, lung cancer, stated by CDC, is regarded as the most common risk for smoking. In the Philippines, approximately 17.8 million Filipinos are smokers. The addictive nature of nicotine combined with carcinogenic exposure in tobacco smoke distinguishes tobacco from all other commodities as a cause of lung cancer. Cotinine, a nicotine metabolite, is easily detected in body fluids and can serve as a biomarker of exposure. Naphthalene, on the other hand, is produced due to the combustion of tobacco cigarette. Inhalation of smoke can lead to Naphthalene exposure in the body. A number of innovations on alternatives to cigarette smoking like e-cigarettes are being developed with goals of reducing the harm caused by smoking. However, there are still no well-founded evidences to support the claims that it is less harmful.
To correlate the levels of serum Naphthalene and Cotinine among classic and e-cigarette users by determining the amount of nicotine absorption with the number of cigarettes smoked among classic smokers and the intensity of nicotine juices among the e-cigarette users. Furthermore, to aid the determination of lung cancer risk and likewise justify the claims of harm-reducing alternatives.

METHODS

Specimens were obtained from sixty subjects. They were randomly chosen to represent their respective subgroups based on a retrospective review of questionnaires. Serum Naphthalene and Cotinine levels were assayed through Gas Chromatography-Mass Spectroscopy (GC-MS) and High Performance Liquid Chromatography (HPLC), respectively.

RESULTS

Results showed that the optimal serum cotinine cut-off for distinguishing classical smokers from nonsmokers is 16.1 ng/mL (AUC = 0.901, p=0.031), while the optimal serum naphthalene cut-off is 305 ng/cigarette (m = 0.910, p=0.001). Additionally, serum Cotinine (r = 0.911, p = 0.002) and serum Naphthalene (r = 0.865, p = 0.041) were significantly correlated with the number of sticks a day for classical smokers. Further, it was found that the mean serum Naphthalene and Cotinine of e-cigarette users were lower than classical smokers.

CONCLUSIONS

Results revealed that serum naphthalene and cotinine levels are significantly lower among e-cigarette users, thus posing lesser risk.

ID: 15123 PIN: 328

QUANTITATIVE PROTEOMIC APPROACH TARGETED TO FIBRINOGEN ® CHAIN IN TISSUE GASTRIC CARCINOMA

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BACKGROUND-AIM

Elevated plasma fibrinogen levels and tumor progression in patients with gastric cancer (GC) have been largely reported. However, distinct fibrinogen chains and domains have different effects on coagulation, inflammation and angiogenesis. The aim of this study was to characterize fibrinogen ® chain (FGB) in GC tissues

METHODS

Retrospectively we analysed the data of matched pairs of normal (N) and malignant tissues (T) of 28 consecutive patients with GC at diagnosis by combining one- and two-dimensional electrophoresis (1DE and 2DE) with immunoblotting and mass spectrometry together with two dimensional difference in gel electrophoresis (2D-DIGE).

RESULTS

1DE showed bands of the intact FGB at 50 kDa and the cleaved forms containing the fragment D at ~37-40 kDa, which corresponded to 19 spots in 2DE. In particular, spot 402 at ~50 kDa and spots 526 and 548 at ~37 kDa were of interest by showing an increased expression in tumor tissues. A higher content of spot 402 was associated with stomach antrum, while spots 526 and 548 amounts correlated with corpus and high platelet count (>208x109/L).

CONCLUSIONS

The quantification of FGB and cleaved products may help to further characterize the interconnections between GC and platelet/coagulation pathways

ID: 15210 PIN: 329

MALDI-TOF MS: RAPID AND RELIABLE IDENTIFICATION OF HAZARD GROUP 3 BACTERIA

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BACKGROUND-AIM

Introduction
Fast and reliable identification of hazard group 3 (HG3) bacteria in clinical laboratories is of great importance. It enables correct handling of the bacteria, preventing serious laboratory acquired infections. According to our laboratory guidelines samples suspected of containing HG3 bacteria with a potential of respiratory transmission must immediately be forwarded to a reference laboratory.
With the advent of matrix-assisted laser desorption ionization–time of flight mass spectrometry (MALDI-TOF MS), clinical microbiology laboratories are able to rapidly identify a range of bacteria including HG3 bacteria. To identify HG3 bacteria with MALDI-TOF MS, the HG3 MBT SR libraries are required. We have installed and validated these libraries to be able to identify HG3 bacteria in cases where any of these are present in sample material handled by personnel in the clinical laboratory.

METHODS

Methods
We examined HG3 bacteria, HG3 surrogate bacteria and HACEK group bacteria. By using HG3 surrogate bacteria, which have the same genus but different species, airborne transmission of hazardous bacteria was prevented. HACEK group bacteria are morphologically similar to some HG3 and served as negative control.
The extraction procedure was performed in a biosafety cabinet before examination.

RESULTS

Results
Surrogate bacteria showed no peaks when using the BDAL library, but were determined by genus when using the MBT SR libraries. HG3 bacteria were determined by correct genus and species. MALDI-TOF results of the HACEK group with MBT SR libraries did not result in any peaks.

CONCLUSIONS

Conclusion
The validation of the extraction method and the MALDI-TOF MS's MBT SR libraries have shown that we are able to rapidly determine HG3 bacteria in our clinical laboratory. Thus, the risk of laboratory acquired infections will be decreased.

ID: 15267 PIN: 33

DETECTION OF HLA- A* WITH CHRONIC RENAL FAILURE PATIENTS IN NORTHERN TAIWAN

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BACKGROUND-AIM

The human leukocyte antigen A genotyping (HLA-A*) complex is a gene complex of the human major histocompatibility complex (MHC) protein, a cell surface protein that is responsible for the regulation of the body's immune system . HLA-A* plays an important role in the needs of patients with chronic renal failure and urgent transplantation. Our aim is to analyze the distribution of HLA-A* in patients with chronic renal failure.

METHODS

We collected 23 samples from patients with chronic renal failure and analyzed genotypes using sequence-specific oligonucleotide primed Polymerase chain reaction (PCR-SSO) with Luminex LAB scan100.

RESULTS

PCR-SSO analysis of HLA-A* typing showed that the distribution and frequency of HLA-A* genotypes were 47% (11/23) for HLA-A * 02/11, 13% (3/23) for HLA-A * 24/-, 17%(4/23) for HLA-A*11/-, 8% (2/23) for HLA-A * 11/33, 8% (2/23) for HLA-A*02/30, and 4% (1/23) for HLA-A*02/-.

CONCLUSIONS

HLA-A * 02/11 was dominant among the patients and HLA-A * 02 allele had a high prevalence, as associated with chronic renal failure in northern Taiwan. The study found that associated with the immune disease of chronic renal failure, the correct genotype analysis can benefit patients with organ transplantation.

ID: 15243 PIN: 330

EFFICIENT AND ACCURATE QUANTITATIVE ANALYSIS OF FIVE ANTIEPILEPTIC DRUGS IN HUMAN SERUM BY LC-MS/MS

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BACKGROUND-AIM

Clinical laboratories traditionally rely on immunoassay and HPLC for quantitation of antiepileptic drugs (AEDs). In recently, we developed and validated an efficient, rapid and accurate LC-MS/MS method for the simultaneous quantitation of five AEDs which are levetiracetam (LEV), lamotrigine (LTG), topiramate (TPM), oxcarbazepine (OXC), 10-OH-carbamazepine (MHD) in human serum.

METHODS

Sample preparation was performed by protein precipitation with acetonitrile (ACN) containing internal standards. After protein precipitation, sample was injected into the Agilent HPLC system and triple quadrupole mass spectrometer. The separation was performed on the Xbridge C18 column (50 x 2.0mm, 5㎛) with a gradient condition. The mobile phase consisted of 10mM ammonium acetate with 0.1% formic acid in D.W (A) and 100% ACN (B). The flow rate was 0.4mL/min. Electrospray ionization source was applied and operated by negative ion mode in TPM and positive ion mode in the others. The method was evaluated about accuracy, precision, linearity, lower limit of detection and quantification (LLOD and LLOQ), auto-sampler carryover, matrix effect and then compared to another laboratory method by using 40 patient samples.

RESULTS

The accuracy (%) ranged from the lowest 94.9% (MHD) to the highest 109.4% (OXC). Inter-day precision (%CV) ranged from the lowest 2.63% (TPM) to the highest 5.54% (LEV). The method was linear in the range of 0.5~50㎍/mL (LEV, MHD), 0.25~25㎍/mL (LTG, TPM) and 0.05~5㎍/mL (OXC). The lowest LLOD was 0.0㎍/mL (OXC), the highest was 0.09㎍/mL (LEV). The lowest LLOQ was 0.005㎍/mL (OXC), the highest was 0.25㎍/mL (MHD). The coefficient of determination (R2) between the two laboratory methods was from the lowest 0.957 (LEV) to the highest 0.995 (OXC). The auto-sampler carryover test and matrix effect were met the acceptable standards.

CONCLUSIONS

A method for simultaneous quantitation of five AEDs was developed with acceptable accuracy, precision, linearity, carryover, sensitivity and matrix effect. This method is rapid (5min per sample), simple (one step protein precipitation) and efficient (using 25㎕ serum) compared to previously reported methods for AEDs. Thus, this method provides a very useful mode for screening and quantitating these five AEDs in human serum.

ID: 15285 PIN: 331

EXPLORING SERUM METABOLOMICS TO IMPLEMENT RISK CRITERIA FOR FIRST-DEGREE RELATIVES (FDR) OF GASTRIC CANCER (GC) PATIENTS.

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BACKGROUND-AIM

A positive family history is a strong risk factor for GC. The main purpose of this study was to research for serum metabolomic signatures useful for the selection FDR at increased risk of GC development.

METHODS

Serum metabolomic profile included 188 metabolites, covering amino acids, biogenic amines, acylcarnitines, phosphatidylcholines, sphingomyelins and hexoses. Metabolite profiles were performed with tandem mass spectrometry using the Biocrates AbsoluteIDQ p180 kit. The initial cohort used as training set was constituted of n=37 FDR and of n=49 GC patients. Differential metabolomic signatures among the two groups were investigated by univariate and multivariate partial least square differential analysis. The most significant metabolites were further selected and validated in an independent group of n=17 FDR and n=22 GC patients. Receiver operating characteristic (ROC) curves were used to evaluate the diagnostic power and the optimal cut-off point for each of the discriminant metabolites.

RESULTS

Forty metabolites mainly belong phospholipids and acylcarnitines classes were significantly altered between FDR and GC patients. Nine metabolites resulting from the training set were further confirmed in the validation set. Compared with FDR, GC patients were characterized by lower levels of hydroxylated sphingomyelins (SM(OH)22:1, SM(OH)22:2, SM(OH) 24:1) and phosphatidylcholines (PC ae 40:1, PC ae 42:2, PC ae 42:3) and by higher levels of acylcarnitines derivatives (C2, C16, C18:1). The sensitivity and sensibility of these metabolomic biomarkers to distinguish potential cancer conditions was 73.47% and 83.78% respectively with AUC of ROC curve of 0.811 that improves to 0.90 when integrated with age and the serum level of serum pepsinogen II.

CONCLUSIONS

This study underlines the role of the use of the individual's serum metabolomic trait to complement the triage of FDR at higher risk of GC development. Specific serum metabolomic signatures enhanced the pepsinogen test used to current stratified FDR risk individuals for endoscopic GC screening although further validation is required.

ID: 15325 PIN: 332

EVALUATION OF COMMERCIAL BIOCHEMICAL IDENTIFICATION SYSTEMS AND TWO MATRIX-ASSISTED LASER DESORPTION IONIZATION-TIME OF FLIGHT MASS SPECTROMETRY SYSTEMS FOR IDENTIFICATION OF GENETICALLY CONFIRMED VIRIDANS GROUP STREPTOCOCCI ISOLATES

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BACKGROUND-AIM

Viridans group streptococci (VGS) are important flora in humans. Accurate identification of VGS associated with bacteremia and infective endocarditis is always a challenge for the clinical microbiology laboratory. Generally, clinical microbiology laboratories use conventional methods, automatic identification systems, matrix-assisted laser desorption ionization–time of flight mass spectrometry (MALDI-TOF MS), and molecular methods for the identification of these bacteria.

METHODS

A total of 108 clinical isolates of VGS causing bacteremia were collected for analysis. These isolates were identified to main VGS groups using 16S rRNA sequencing analysis. The performance of two automatic biochemical identification systems (Phoenix and Vitek 2) and two MALDI-TOF MS systems (Bruker Biotyper and VITEK MS) for the identification of these genetically-confirmed isolates were evaluated.

RESULTS

The species of VGS can be divided into following five major groups, Streptococcus anginosus group, Streptococcus salivarius group, Streptococcus bovis group , Streptococcus mutans group and Streptococcus mitis group. For the 31 S. anginosus group isolates, the correct rate of Phoenix, VITEK 2, MALDI Biotyper, and VITEK MS is 90.3%,77.4%,100%and 96.8%,repectively. For the 7 S. salivarius group isolates, the correct rate of Phoenix, VITEK 2, MALDI Biotyper, and VITEK MS is 100%,85.7%,85.7%and 100%,respectively. For the 22 S. bovis group isolates, the correct rate of Phoenix, VITEK 2, MALDI Biotyper, and VITEK MS is 86.3%,100%,100%and 100%,respectively. In the 2 S. mutans group isolates,the correct rate of all kinds of machine is 100%. As for the 46 S. mitis group isolates, the correct rate of Phoenix, VITEK 2, MALDI Biotyper, and VITEK MS is 78.2%,93.5%,93.5%and 95.7%,respectively. In this study the overall sensitivity of Phoenix, VITEK 2, MALDI Biotyper, and VITEK MS is 85.4%,90%,96.3%and 97.3%, respectively.

CONCLUSIONS

When we used Bruker Biotyper 3.1 software and library (DB 5627 with 5627 entries), S. mitis group accurate identification rate was 65.2%.However, the accurate identification rate was 93.5% with Bruker Biotyper 3.4 software and library (DB 6120 with 6120 entries). Our results suggested that MALDI-TOF MS systems can already offer an acceptable performance for the identification of VGS.

ID: 14792 PIN: 333

LEVELS OF HOMOCYSTEINE, HIGH-DENSITY LIPOPROTEIN CHOLESTEROL, AND WAIST TO HIP RATIO ARE RELATED WITH ANKLE BRACHIAL INDEX IN PATIENTS WITH TYPE 2 DIABETES MELLITUS AND HYPERTENSION

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BACKGROUND-AIM

Type 2 diabetes mellitus (T2DM) and hypertension (HTN) are major risk factors for peripheral artery disease (PAD). Ankle brachial index (ABI) is a simple, noninvasive method for the estimation of PAD.
Early identifications of those T2DM with HTN individuals at high risk for PAD with subsequent interventions are important. The aim of the present study was to determine whether there is an association between ABI and cardiovascular risk factors in patients with T2DM and HTN.

METHODS

This was a cross-sectional study with a total of 90 patients with T2DM and HTN who had no apparent history of cerebro-cardiovascular disease were enrolled. After careful clinical examinations and biochemical evaluations, the enrolled subjects underwent ABI examinations by using VP-1000 Automatic Arteriosclerosis Measurement System. We used linear regression models to assess the relationship between cardiovascular risk factors and ABI in studied subjects.

RESULTS

The mean age of T2DM subjects with HTN was 62.4±8.2 years and the mean duration of diabetes was 12.3±6.7 years. The mean ABI value was 1.09±0.07. We found that values of ABI had statistically significantly correlations with the male sex ($r=0.343$, $p<0.001$), waist to hip ratio (WHR) ($r=0.399$, $p=0.0001$), smoking ($r=0.246$, $p=0.02$), drinking ($r=0.297$, $p=0.005$), pulse pressure (PP) ($r=-0.241$, $p=0.02$), red blood cell count (RBC) ($r=0.253$, $p=0.02$), hemoglobin (Hb) ($r=0.274$, $p=0.009$), hematocrit (Hct) ($r=0.242$, $p=0.02$), high-density lipoprotein cholesterol (HDL-c) ($r=0.189$, $p=0.08$), folic acid ($r=-0.246$, $p=0.02$). In a multiple linear regression analysis, WHR (95% CI: 0.395-0.107; $p<0.001$), HDL-c (95% CI: 0.002-0.006; $p=0.001$), and log Homocysteine (Hcy) (95% CI: -0.143 to 0.054; $p=0.01$) were independently associated with levels of ABI in T2DM with HTN after adjustment of confounding risk factors.

CONCLUSIONS

These results suggest that lower HDL-c, WHR, and higher Hcy increase the risk of PAD in asymptomatic patients with T2DM and HTN.

ID: 15014 PIN: 334

ROLE OF STANDARD MARKERS AND HSP 70 IN DIAGNOSTIC AND PROGNOSTIC MANAGING OF ACS

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BACKGROUND-AIM

Atherosclerotic changes followed in plaque formation, instability and rupture lead to serious ischemic events that can be measured and treated. Chosen panels that can facilitate diagnosis and in that manner protocol in treatment and prognosis are based on standard parameters involve in heart muscle metabolism and activity.
Our study is aimed in enlarging the field of option to diagnose, follow up and prognoses further event induced by hypoxia and in same time providing more benefit to the patients, physicians and laboratory workers. With that purpose we try to find out is specific markers for oxidative stress such as Heat shock proteins can fulfill the expectations.

METHODS

In this study we include measuring of CK, CKMB, (activity or mass concentration) Myoglobin and Troponins. Additionally, measuring of HSP 70 was due to fact that those molecular chaperons are involve in engaging processes for cell and tissue protection
Inflammation response was measured by CRP level and leukocytes count..
Spectrophotometry and immunoassay based on electro-chemi-lumiscence were used in measuring enzyme activity and level of CRP, myoglobin, troponin and mass concentration. Presence and concentration of HSP70 antibody was estimated with ELISA technique.

RESULTS

Statistical analysis shows elevation in activity of CK and CKMB, but most remarkable and significant increase was estimated for CKMB mass concentration and Troponin T at the patient diagnosed with AMI. Since our interest was pointed in level of HSP 70, CRP and leukocytes count, our results show significant differences($p<0,05$) between patients values vs control. Namely, concentration of HSP 70 antibody at the patients with AMI was estimated as 26.3 -fold higher values vs control group ($p<0,05$). As for CRP level increase was pointed at 8,6-fold vs control group while moderate elevation of leukocytes count was found at the patients diagnosed as AMI (2,0-fold increase vs control group).

CONCLUSIONS

Our result confirm activation of HSP70 in condition of oxidative stress and induction of several mechanisms in protection of tissue stability as well as preventing proteins disintegration in such condition. From here, our standings is that measuring of this protein in follow up period can provide useful information in predicting event and patients outcome.

ID: 15054 PIN: 335

RELATIONSHIP BETWEEN LIPIDS AND INSULIN RESISTANCE IN APPARENTLY HEALTHY ADULTS IN ENUGU, NIGERIA.

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BACKGROUND-AIM

Insulin resistance plays a major role in the prediction and development of type 2 diabetes and metabolic syndrome. Therefore, there is need to develop a reliable marker of insulin resistance which should be simple and cost effective, since the gold standard is complicated and costly.

METHODS

This is a cross sectional study on 200 apparently healthy adults in Enugu State, Nigeria. Anthropometric parameters and Blood pressure were measured using standard protocols. Fasting blood samples were collected for the measurement of fasting plasma glucose (FPG), serum Insulin, total cholesterol (TC), triacylglycerol (TAG), high density lipoprotein cholesterol (HDLc) and uric acid. Insulin resistance was identified using HOMA- IR of ε2.5Uu/ml.mmol/L. Data obtained were statistically analyzed using SPSS and inference made at $P<0.05$.

RESULTS

Insulin resistance was identified in 31% of the subject studied. Significant higher mean levels of TAG, TAG/HDLc, and VLDLc were observed in male subjects compared to the female subjects. Subjects with insulin resistance recorded significant higher mean levels of TC, TAG, TAG/HDLc, and VLDLc compared to subjects without insulin resistance. However, only TAG and VLDLc correlated significantly with HOMA-IR in this study.

CONCLUSIONS

Triacylglycerol may be used as an affordable and simple routine test for the prediction and diagnosis of insulin resistance in this population.

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CARDIOMYOCYTE NUMBER EXPANSION IS LIMITED TO THE NEONATAL MOUSE

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BACKGROUND-AIM

The extent of cardiomyocyte generation and renewal in the adult heart has been heavily debated. A recent report suggests that during mouse preadolescence, cardiomyocyte proliferation leads to a 40% increase of the cardiomyocyte compartment. Such an expansion would change our understanding of heart growth and have far-reaching implications for cardiac regeneration.

METHODS

By using design-based stereology, we found an increase in the number of cardiomyocytes during the neonate period. 15N-thymidine and BrdU analyses provided no evidence for a proliferative peak in preadolescent mice.

RESULTS

Taking multinucleation into account, we established that cardiomyocytes expanded between postnatal day two (1.7x106 ± 0.2x106 SD) and postnatal day 5 (2.3x106 ± 0.2x106 SD) (ANOVA, post-hoc t-test with Holm-Bonferroni correction, $p < 0.05$). However, the size of the cardiomyocyte pool in mice after postnatal day eleven remained constant (2.6x106 ± 0.6x106 SD) at least until P100. And Less than 3% of all cardiomyocyte nuclei incorporated BrdU and 15N Thymidine in preadolescent mice. By contrast, following cardiomyocyte multinucleation, there was an increase in cardiomyocyte nuclear ploidy within the second and third postnatal weeks by approximately 10%.

CONCLUSIONS

We conclude that the number of murine cardiomyocytes is set within the neonatal period, and that this event is followed by two waves of non-replicative DNA synthesis.

ID: 15152 PIN: 337

GENETIC THROMBOFILIA AND THROMBOSIS OF VENOUS LONGITUDINAL SINE

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BACKGROUND-AIM

Thrombosis of the cerebral venous sinuses (TCVS) is a rare disease, with very variable clinical presentation and prognosis. The superior longitudinal sinus is the site that is most affected. Among the risk factors for this disease are alterations that suppose a state of hypercoagulability, such as mutation of factor V Leiden (FVL), the mutation of prothrombin 20210 (PT 20210) and hyperhomocysteinemia.
The aim was to study the prevalence of FVL mutations, the mutation of PT 20210 and Factor XII in a group of patients diagnosed with longitudinal sinus thrombosis (TSL).

METHODS

A retrospective study of patients diagnosed with TSL diagnosed between 2010-2017 has been carried out. The diagnosis was made by the clinical picture and by imaging tests. The study of mutations of Factor XII (C46T), FVL (G1691A) and PT (G20210A) were performed by real-time PCR in the Light-Cycler® autoanalyzer (Roche Diagnostics). Homocysteine was determined by enzyme immunoassay in the TRITURUS® analyzer (Grifols). It was established as a normal cutoff point of 12 for males and 10 for females. The statistical analysis was carried out with the statistical program SPSS® version 22.

RESULTS

A total of 17 patients were analyzed (70.6% women). The mean age was 55.2 ± 19.1 years. Two patients (11.8%) had at the time of the episode less than 30 years and five patients (29.4%) was between 30-40 years. A single patient (5.8%) presented the PT 20210 mutation. Regarding Factor XII: Six (35.3%) were heterozygous (CT) and one patient presented homozygous mutation (TT). Highlight the fact that the person who presented the mutation in homozygosis was the youngest in the study (23 years). Regarding homocysteine: 66.7% of women had values greater than 10 and 60% of men values greater than 12.

CONCLUSIONS

We can conclude that moderate or high homocysteine values are a clear risk factor for TSL. The factor XII mutation also seems to be a risk factor. Although it is true, studies should be conducted to determine the relationship between the form of presentation of the mutation (hetero or homozygosis) and its relationship with the appearance of TSL at younger ages. Studies with more number of patients are necessary to see the relation of the FVL and PT 20210 mutations with the thrombosis of the breast.

ID: 15173 PIN: 338

INCREASED SERUM LEPTIN LEVELS AMONG BODY MASS INDEXED-OBESE FILIPINOS AGED 20 TO 44 IN ASSESSING THE POTENTIAL RISK FOR VENOUS THROMBOEMBOLISM

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BACKGROUND-AIM

Leptin is a 167-amino acid peptide synthesized that is almost exclusive in adipose tissue(Lekarski, 2000). It is associated with increased platelet aggregation which has been suggested as a mechanism for acute thrombotic events in obesity (K.A.L. Darvall et al., 2007). The relationship of serum leptin with increased body-mass-index (BMI) was investigated as a tool to assess the risk for venous thromboembolism among BMI-Obese Filipino patients aged 20-44.

METHODS

Specimens were obtained from 56 subjects which were selected through a questionnaire and categorised accordingly to their subgroups. Mean platelet volume was measured through electric impedance, serum leptin was measured using Enzyme-Linked Immunosorbent Assay and D-dimer was used as a screening test for venous thromboembolism. Also, a high sensitivity C-reactive protein was measured along with the other tests.

RESULTS

While leptin levels are correlated with mean platelet volume ($p < 0.001$) and C-reactive protein ($p = 0.013$), the risk of developing venous thromboembolism increases ($p < 0.05$) when the markers are elevated. Moreover, the odds of having venous thromboembolism is three times more likely [Odds Ratio= 3.1, 95% Confidence Interval= 2.7 to 3.5] for patients with high level of D-dimer.

CONCLUSIONS

The increased levels of serum leptin corresponded with increased body mass index (BMI) along with increased mean platelet volume (MPV) which was used as an indicator for increased platelet aggregation, suggesting a positive relationship with the risk for developing venous thromboembolism. Obese type 1 males and females presented a slight increase in serum leptin levels and D-dimer levels. Obese type 2 males and females presented a moderately increased serum leptin and D-dimer levels. Finally, Obese type 3 participants presented with a significantly high increase in serum leptin and D-dimer levels. In conclusion, an increase in serum leptin levels correspond with increased risk for venous thromboembolism as measured by D-dimer.

ID: 15186 PIN: 339

CARDIOVASCULAR RISK FACTORS AND OXIDATIVE STRESS INDICES IN OBESE WOMEN IN SOUTHERN NIGERIA.

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BACKGROUND-AIM

Dyslipidemia and microvascular disorders have been associated with obesity; increased generation of reactive oxygen species (ROS), lipid peroxidation and oxidative stress have been implicated.

METHODS

Ninety consenting apparently healthy women aged 22-55years comprising of obese (n=40), overweight (n=20) and normal weight (n=30) were recruited into the study. The lipid profile (total cholesterol (TC), triglycerides (TG), low density lipoprotein (LDL), very low density lipoprotein (VLDL), high density lipoprotein (HDL)), malondialdehyde (MDA), total antioxidant capacity (TAC), glutathione (GSH) and nitric Oxide (NO) were determined using colorimetric methods, oxidative stress index (OSI) and atherogenic index of plasma (AIP) by calculation. Anthropometric indices (body mass index (BMI)) and blood pressure (systolic (SBP) and diastolic (DBP)) were obtained using standard methods. Data were analyzed using analysis of variance (ANOVA) and Pearson's correlation at $p<0.05$.

RESULTS

The BMI, SBP, DBP, MDA, TPP, OSI, TC, TG, LDL, VLDL and AIP were significantly lower and GSH, NO, TAC and HDL higher in controls compared to obese; with lower BMI, SBP, DBP, MDA and higher GSH, NO and TAC compared to overweight subjects studied ($p<0.05$). Obese subjects had higher BMI, DBP, TPP, OSI, TC, LDL, AIP and lower TAC and HDL compared to overweight subjects ($p<0.05$). Positive correlations were observed between MDA and TC ($r=0.336$, $p=0.034$), LDL-C ($r=0.322$, $p=0.043$) and negative correlation between HDL-C and AIP ($r=-0.636$, $p=0.000$) only in obese subjects.

CONCLUSIONS

Obesity seems to be associated with dyslipidemia, increased lipid peroxidation and reduced antioxidants which may result in oxidative stress and development of atherosclerosis.

ID: 15268 PIN: 34

CREATININE AND CYSTATIN C BASED ESTIMATED GLOMERULAR FILTRATION RATE (GFR) EQUATIONS IN LIVING KIDNEY DONORS COMPARISON

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BACKGROUND-AIM

Kidney transplantation is the best treatment option for end stage renal disease. Kidney transplantations have been successfully performed in Mongolia since 2006. Follow-up of recipients show satisfactory in our country, but long-term follow-up of donors shows otherwise. An estimation of kidney function is crucial in the evaluation of prospective living kidney donors and follow-up after transplantation. Recent studies suggest that estimating GFR and evaluating kidney function by cystatin C is superior than creatinine and urea for diagnosis of kidney impairment. Thus we aimed to compare creatinine and cystatin C based eGFR equations and assess kidney function and in kidney donors for 2-year follow-up.

METHODS

- We followed up 22 LKD for two years. Each visit included questionnaire, blood and urine sample collection, and measurement of BMI, blood pressure.
- We estimated GFR by aMDRD, Cockcraft -Gault, CKD EPI crea , Lebricon, CKD EPIcys c, and CKD EPIScrea-cys c formulas.

RESULTS

The mean age of donors was 48.05±13.5 years with M:F ratio of 1:1.44. The mean lifetime after unilateral nephrectomy was 57.41±31,61 months. In 2014 and 2015, eGFR of less than 60 ml/min/1.73 m2 was 1 (4.5%); 2 (9.09%) by Le Bricon, 3 (13.6%); 4 (18.18%) by CKD-EPI cys c, and same 0 (0%) by Cockcroft-Gault formulas. CKD EPIScr-cys formula has large correlation with CKD EPIcys c ($r=0.955$, $p<.05$), CKD EPIcrea ($r=0.843$, $p<.05$), LeBricon ($r=0.599$, $p<.05$), aMDRD ($r=0.691$, $p<.05$), Cockcroft-Gault ($r=0.532$, $<.05$).

CONCLUSIONS

- We conclude that cystatin C and creatinine combined CKD EPIScr-cys is accurate, reliable than other estimations.
- There are no impaired kidney function in living kidney donors for short-term follow up, thus we need to follow up long-term.

ID: 15201 PIN: 340

HEMATOCRIT, URIC ACID, AND HIGH SENSITIVITY-C REACTIVE PROTEIN ARE RELATED WITH PULSE MASS INDEX IN MIDDLE-OLD AGED T2DM PATIENTS WITH NORMAL RENAL FUNCTION

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BACKGROUND-AIM

The pulse mass index (PMI) has a high correlation with the Framingham Risk Score (FRS), can be helpful to evaluate the risk of cardiovascular disease (CVD). The aim of the present study was to determine whether there is an association between PMI and cardiovascular (CV) risk factors in middle-old aged T2DM patients with normal renal function.

METHODS

This was a cross-sectional study with a total of 82 middle-old aged T2DM patients with normal renal function (defined as estimated glomerular filtration rate (eGFR) ≧60 ml/min/1.73m2). Those who had no apparent CKD and cardiovascular vascular disease. The PMI was equal to body mass index (BMI) by rest heart rate (RHR) divided by 1730 (BMI×RHR/1730) (high CV risk: PMI≧1.3). We obtained information about medical history and lifestyle, clinical examinations, and biochemical evaluations. We used linear regression models to assess the relationship between CV risk factors and PMI in studied subjects.

RESULTS

Of this study subjects, the mean age was 61.3±7.9 years and the mean duration of diabetes was 11.2±5.8 years. The mean PMI value was 1.1±0.2. We found that values of PMI had statistically significantly positive correlations with the waist circumference ($p<0.001$), BMI ($p<0.001$), overall obesity ($p<0.001$), abdominal obesity ($p=0.004$), antihypertensive treatment ($r=0.23$, $p=0.04$), RHR ($p<0.001$), diastolic blood pressure ($p=0.03$), white blood cell count ($p=0.01$), hematocrit (Hct) ($p=0.04$), platelet ($p=0.03$), hemoglobin A1c ($p=0.03$), fasting blood glucose ($p=0.004$), uric acid (UA) ($p=0.04$), triglyceride ($p=0.005$), high sensitivity-C reactive protein (hs-CRP) ($p<0.001$), fibrinogen ($p=0.05$), log urine microalbumin ($p<0.001$), urine creatinine ($p=0.03$), and log urine albumin to creatinine ratio ($p=0.01$), and negative correlations with the age ($p=0.01$), duration of diabetes ($p=0.03$), and regular exercise ($p=0.05$). Results of multiple regression analysis showed that Hct (B=0.027, 95% CI: 0.009-0.046, $p=0.005$), UA (B=0.047, 95% CI: 0.010-0.084, $p=0.013$), and log hs-CRP (B=0.129, 95% CI: 0.009-0.249, $p=0.04$) were significantly associated with PMI after adjustment of confounding risk factors.

CONCLUSIONS

The findings of this study suggest that Hct, UA, and hs-CRP are associated with PMI in a group of middle-old aged T2DM patients with normal renal function.

ID: 15273 PIN: 341

REVISITING THE OUTCOME OF RBC TRANSFUSION IN CARDIAC SURGERY PATIENTS IN NORTHERN TAIWAN

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BACKGROUND-AIM

Allogeneic red blood cell (RBC) transfusion was associated with risk and side effect in cardiac surgery. Although clinical studies suggested a negative effect of transfusion, the dose response to RBC transfusions and hospital length of stay (LOS) is still controversial. The aim of this study was to determine the dose-response relationship and assess LOS in cardiac surgery patients.

METHODS

To assess the relationship between RBC transfusion and hospital LOS in patients undergoing cardiac surgery, 160 cardiac surgical patients were analyzed in the retrospective study.

RESULTS

Patients were divided into 3 groups by transfusion status: (A) none-transfusion (n=83); (B) transfusion of 0.5-3 units of RBC (n=61) and (C) transfusion of > 3 units RBC (n=16). Patients without any RBC transfusion had significantly shorter hospital LOS than patients who had more than 3 units of RBCs: 16 days [95% CI, 15–30] in group C vs. 13 days [95% CI, 13–15] in group A ($p < 0.001$). The strongest independent predictors of hospital LOS were combined procedure and RBC transfusion.

CONCLUSIONS

Hospital stay in patients undergoing cardiac surgery was associated with the amount of red cells used RBC transfusion. Our study showed that a restrictive transfusion strategy would offer medical benefit, especially to cardiac surgical patients.

ID: 15287 PIN: 35

IDENTIFICATION OF HLA-SPECIFIC ANTIBODY DISTRIBUTION IN PATIENTS AWAITING RENAL TRANSPLANTATION IN TAIWAN

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BACKGROUND-AIM

Human leukocyte antigen (HLA) specific antibodies play an important role in allotransplant rejection and allograft loss. The level of HLA alloantibodies in patients influences the waiting time for organ transplant. The gene frequency of HLA differs in region, country and ethnics, so the differences of HLA alloantibody frequency. The aim of this study was to investigate the frequency of HLA antibodies and identify the distribution of specific antibodies from renal transplant waiting list patients in Taiwan.

METHODS

A total of 227 patients were collected from a medical center in Taiwan in 2017. All sera were first screened HLA antibodies by LIFECODES LifeScreen Deluxe Kit (Immucor, Inc., USA). Antibody assignments were identified by LIFECODES HLA Class I/II ID kits (Immucor, Inc., USA). All of the experiments was performed on multiplex Luminex xMAP platform and analyzed by MATCH IT! Software.

RESULTS

Of 227 patients, the HLA class I, II, and I+II positivity rates for antibodies screening were 15.0% (34/227), 8.4% (19/227) and 23.3% (53/227), respectively. The frequencies of HLA class I antibodies HLA-A, B and C were 50.7% (36/71), 69.0% (49/71) and 36.6% (26/71), respectively. For HLA class II antibodies, the frequencies of HLA-DR and DQ were 87.4% (76/87) and 54.0% (47/87), respectively. The most frequent distribution observed were HLA-A02, A25 and A30 for HLA-A (Cut-off 9%), B58, B64, B65, B7 and Bw4 for HLA-B (Cut-off 9%), Cw01, Cw17 and Cw08 for HLA-C (Cut off 9%), DR01, DR103 and DR51 for HLA-DR (Cut-off 30%), as well as DQ02, DQ07 and DQ08 for HLA-DQ (Cut-off 20%), based on the threshold of median fluorescence intensities (MFI) values more than 1,000.

CONCLUSIONS

Our study concluded that both HLA class I+II antibodies were higher positivity rates and provided a most highly frequencies information of HLA antibodies showed HLA-A02, A25, A30, B65, Cw17, DR01 and DQ02 for identification of antibody distribution in patients on the waiting list in Taiwan.

ID: 15296 PIN: 36

DYNAMIC CHANGES OF SERUM HLC IGG, IGA, AND IGM KAPPA AND LAMBDA AFTER LIVER TRANSPLANTATION IN THE RELATIONSHIP TO PRETRANSPLANT ELF SCORE

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BACKGROUND-AIM

Increased serum IgA concentrations in liver fibrosis indicate decreased prognosis of the patient. Increased ELF score (Siemens, calculated from serum concentrations of hyaluronic acid, HA; N-terminal propeptide of procollagen III, PIIINP; and tissue inhibitor of metalloproteinase 1, TIMP-1) is a predictor of fibrosis severity. Immunosuppressants used after liver transplantation decrease the immune response, both cellular and humoral. The aim was to study the relationship between serum immunoglobulin heavy/light chain pairs (HLC) of immunoglobulins G, A, and M (HLC IgA, IgG, IgM kappa and lambda) and pretransplant ELF score and to evaluate dynamic changes of HLC after liver transplantation (LTx) during 3 years of follow-up.

METHODS

A total of 117 patients was recruited during a period of 36 months. Serum samples were taken before Tx (ELF score, HLC), on the 1st, 2nd, and 3rd year after LTx (HLC IgG, IgA, IgM). HA, PIIINP, and TIMP-1 were measured on Siemens Centaur XP analyzer and ELF score was calculated by formula 0.846*ln(HA) + 0.735*ln(PIIINP) + 0.391*ln(TIMP-1) + 2.494. HLC IgG, IgA, and IgM (The Binding Site) were measured on Optilite analyzer (The Binding Site).

RESULTS

The median od pretransplant ELF score was 12.4, interquartile range (IQR) 11.8-13.0. The pretransplant medians (IQR) of HLC IgA kappa, HLC IgA lambda, HLC IgG kappa, HLC IgG lambda, HLC IgM kappa, and HLC IgM lambda were 3.7 (2.5-5.2), 2.9 (2.0-3.9, 10.4 (8.5-13.4), 5.9 (4.6-7,7), 1.1 (0.7-1.9), and 0.7 (0.4-1.1), respectively. Highest concentrations of both pre-LTx HLC IgA kappa and lambda were in the 3rd tertile of ELF score (both $p<0.01$). HLC IgA, IgG, and IgM kappa and lambda decreased during the first post-LTx year, maximal decreases were in the 3rd tertile of ELF score ($p<0.05$ for all). Ratios of HLC IgA, IgG, and IgM kappa/lambda was above 1 in more than 90 percent of patients before, +1 and +2 years after LTx.

CONCLUSIONS

The increased concentrations of HLC IgA kappa and HLC IgA lambda were positively correlated to the pretransplant ELF score. All HLC pairs decreased significantly after LTx. The clinical relevance of these significant changes should be further studied.
The work was supported by the Ministry of Health of the Czech Republic (grant number: AZV MZ 15-27579A).

ID: 15300 PIN: 37

GLUCOSE LEVEL DURING STORAGE OF PLATELET CONCENTRATES COLLECTED WITH AMICUS AND TRIMA APHERESIS MACHINES.

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BACKGROUND-AIM

The bloodbank (BB) at St. Olavs Hospital produce about 2300 platelet concentrates (PC) from multiple blood donors and about 600 PC from thrombapheresis (Amicus and Trima Accel) per year.
Since 2003 the BB has used pathogen inactivation (PI) with Intercept on all PC.
In 2012, Intercept DS (Dual Storage) with SSP+ (Platelet Additive Solution) was implemented for PC produced from multiple donors.
In 2017 a new Trima Accel was introduced together with Intercept DS with SSP+ for both apheresis machines. Plasma/SSP+ ratio with a maximum 47% plasma is required by the Intercept system, as plasma is the glucose source for the metabolism of the platelets.The content of K+ and Mg2+ in SSP+ leads to reduced glycolysis, and thus better storage conditions for platelets (1).Glucose detected during storage will indicate an acceptable platelet function, as the glucose content is an indirect indicator of survival of the platelets in vitro (2).

METHODS

Parameter settings on the apheresis machines are optimized by adjusting platelet yield, product volume, and plasma/PAS ratio. Glucose, lactate and pH were measured on days 2, 5 and 7 after apheresis.
In PC from Trima Accel, glucose was not detectable on day 7. The plasma/SSP+ ratio was changed from 40/60 to 45/55. Thus, the ratio was set to 45/55 when validating PC from Amicus.

RESULTS

Decreasing levels of glucose were found throughout the storage period, and corresponding results for pH and lactate. In double and single PC from Trima Accel, we achieved glucose level on day 7 similar to PC from multiple blood donors. In double PC from Amicus, there was a considerably lower glucose level on day 7,while single PC had satisfactory glucose level

CONCLUSIONS

We have observed a difference in glucose content on day 7 between Amicus and Trima Accel PC. This might be due to different levels of activation of platelets caused by different principles of collection, wich can lead to different glucose consumption during storage (3). However, these results will not have consequences for the production of PC, as there is no documentation that these differences in activation may have clinical consequences for patients receiving PC. Intercept DS with a 45/55 plasma/SSP+ ratio has been implemented for both Trima Accel and Amicus Apheresis.

ID: 15306 PIN: 38

ASSOCIATION OF RBC ALLOIMMUNIZATION WITH HLA CLASS II ALLELES IN TAIWANESE POPULATION

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BACKGROUND-AIM

HLA class II molecules have been known to play an important role in RBC alloimmunization. This study was aimed to investigate the associations between HLA class II alleles and the formations of RBC alloantibodies among Taiwanese population.

METHODS

First, a total of 7,471 patients with identified RBC antibodies collected from National Taiwan University Hospital between 1994 and 2017 were initially enrolled to access the occurrence of each antibodies. Second, a retrospective case-control study was conducted to compare the HLA class II allele frequencies among 323 RBC alloimmunized patients with those among 7,648 unrelated control subjects using Pearson chi-square test. Peptide-binding predictions of HLA class II molecules against specific RBC antigenic epitopes were subsequently performed by NetMHCIIpan 3.1.

RESULTS

Anti-"Mi^a" was the most frequent antibody produced in near half of immunized individuals (47.54%), followed by anti-E with a percentage of 33.38%. HLA-DRB1*04 allele showed a significantly increased frequency among patients with anti-"Mi^a" compared to controls (24.41% vs 14.93%, OR=1.84, p_c <0.001), while HLA-DRB1*09 alleles were more frequently observed in patients with anti-E specificity compared to controls (22.22% vs 14.41%, OR = 1.7, p_c = 0.004). HLA-DRB1*04 and HLA-DRB1*09 molecules were predicted to effectively bind with allo-specific peptides of Mi.III/Mi.I and E antigen, respectively.

CONCLUSIONS

This study suggested that HLA-DRB1*04 and HLA-DRB1*09 alleles could respectively be restriction molecules on the relative immunogenicity of Mi.III/Mi.I and E antigen due to the more effective peptide-binding during the process of antigen presentation. Because HLA-DRB1*04 and HLA-DRB1*09 are two of the most common DR phenotypes in Taiwan, these results could be helpful for evaluating the susceptibility of patients to RBC alloimmunization in blood transfusion.

ID: 15361 PIN: 39

IMPACT OF MICROBIAL TRANSLOCATION AND SYSTEMIC INFLAMMATION ON IMMUNE RECOVERY IN HIV-RELATED LYMPHOMA PATIENTS TREATED WITH HIGH-DOSE CHEMOTHERAPY PLUS AUTOLOGOUS STEM CELL TRANSPLANTATION

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BACKGROUND-AIM

Gut dysbiosis can affect cancer therapies outcome while oncologic treatments lead to systemic inflammation (SI), gut barrier deterioration and microbial translocation (MT). The impact of MT-SI on immune recovery in immunocompromised patients submitted to intensive CT is unexplored. This retrospective study focuses on the impact of MT on CD4 T cell recovery and thymic output in HIV+ patients with lymphomas after first line CT (CT_I) submitted to debulking CT (DCT) and high dose CT (HDC) plus autologous stem cell transplanatation (ASCT).

METHODS

24 relapsed/refractory HIV+ lymphoma patients after CT_I, with lymphoma remission for at least 3 years from DCT and HDC plus ASCT were studied. 16S rDNA, sCD14, signal joint TCR receptor excision circles (sjTRECs) were measured as markers of MT, SI and thymic output, respectively. Immunological-responder (IRs) and non-responder patients (INRs) were defined taking into account CD4 normal range. Nonparametric statistical analysis was used to compare continuous variables.

RESULTS

Median follow-up was 7.4 yrs (range 3-13.8 yrs). IRs at the last visit were 50%. After CT_I (T0), 16S rDNA, sCD14 and sjTRECs levels were comparable between INRs and IRs, CD4 were lower in INRs compared to IRs (p=0.001). After DCT plus G-CSF, a significant reduction in 16S rDNA levels in IR (p=0.02), slight reduction of CD4 T cell counts and stability of sCD14 in both groups were observed. CD4 T cells reached their nadir 15 days after ASCT while 16S rDNA levels increased (overall, 0 cp/mL vs. 66 cp/mL, p=0.04). This was associated with an increase in mucositis and enteric complicances. Three years after ASCT, CD4 and sjTRECs increase was low in INRs (+55%, +42%) and high in IRs (+110%, +716%). In INRs, T0-sCD14 correlated with CD4 recovery until 36 months after ASCT (r=-0.77, p=0.02); positive correlations were observed with 16SrDNA. TM-SI didn't influence thymic output

CONCLUSIONS

MT-SI may delay immune reconstitution after intensive CT in patients with severe lymphopenia. In this scenario, CD4 T cell recovery in the long term follow-up can be fostered by antigen-dependent T cell expansion rather than synthesis of naïve CD4 T cell from thymus

ID: 15321 PIN: 4

NATIONAL SURVEILANCE OF ANTIMICROBIAL RESISTANCE IN KOREA

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BACKGROUND-AIM

Multidrug resistance bacteria has been a constant problem for the treatment of bacterial infections. Korea has designated six multi drug-resistant bacteria as reportable infectious diseases in 2010. : vancomycin-resistant Staphylococcus aureus (VRSA), vancomycin- resistant Enterococci (VRE), methicillin- resistant S.aureus (MRSA), multidrug-resistant Pseudomonas aeruginosa (MRPA), multidrug-resistant Acinetobacter baumannii (MRAB), and carbapenem-resistant Enterobactericeae (CRE). We review the reporting system to KCDC about these six multi drug resistant bacteria isolated from major hospitals in Korea.

METHODS

We also examine a senital surveilance system involves which the systematic collection and analysis of health associated data about six multidrug - resistant bacteria. and we find out Korea situation and trend of antimicrobial resistance from 2007 to 2015.

RESULTS

The resistance rates in major hospitals are as follows.
Oxacillin resistance of S. aureus isolated in 2015 was lower than in 2014, and VRSA was not isolated. The resistance rate of ampicllin of Enterococci in 2015 was higher than that of 2014, and the resistance rate of vancomycin was similar to that of 2014. Pseudomonas aeruginosa, which is resistant to all three antibiotics, including the carbapenem system (imipenem or meropenem), the aminoglycoside system (amikacin or gentamicin or tobramycin), and the fluoroquinolone system (ciprofloxacin or levofloxacin) Since 2007, the resistance rate has continued to be more than 20%. A.baumannii, which is resistant to the carbapenem system (imipenem or meropenem), the aminoglycoside system (amikacin or gentamicin or tobramycin), and the fluoroquinolone system (ciprofloxacin or levofloxacin) increased compared to 2007. Carbapenem-resistant bacteria are also increasing with the increasing use of carbapenem for the treatment of beta-lactamase producing bacteria such as ESBL. Various CPEs have been identified in Korea.

CONCLUSIONS

It has been a serious problem that the IRAB and CRE in Korea. We try to seek methods to reduce the resistant rate.

ID: 15470 PIN: 40

EFFECTS OF SUBSTRATE RIGIDITY ON EPITHELIAL CANCER CELL LINES FEATURES

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BACKGROUND-AIM

Tumor microenvironment is mechanically stiffer than healthy tissue 1. The role of mechanical cues in the progression of cancer cells remains poorly studied.
Cells connect to the ECM by cell-substrate adhesion molecules and sense their Extracellular matrix (ECM) by contractile forces with magnitudes depending on mechanical properties of ECM2. The stiffness of ECM modulates different cellular behaviours like proliferation3 and migration4.
In this paper, we examined the effect of substrate stiffness on the behaviour of two breast cancer cell lines with different invasiveness levels

METHODS

Substrates with different elastic moduli were prepared using sylgard 184 by mixing different base:curing agent ratios of 10:1, 75:1 coated by Collagen type 1 for functionalising surface.
Two different human breast cell lines MCF7 and MDA-MB-231 were provided. They were cultured on the prepared substrates at a low confluence for specific time periods. Cellular vital metastatic features were quantified. For statistical significance determination student t- test were performed.

RESULTS

Cells were cultured on PDMS substrates with two different elastic moduli measured as 5.5MPa, 290kPa called stiff and soft substrates measured by nano-indentation technique (AFM). On the stiff substrates cells spread remarkably and the length of cell lamellipodia increased noticeably. The average areas of cells on the stiff substrate were approximately 3 times higher than those on the soft substrates. Furthermore, cells proliferated better on the stiff substrates and presented lower cellular speed. Integin ®1 and E-cadherin as cell-substrate and cell-cell adhesion marker increased by substrate stiffening.
Enhancement in cellular area, spreading and cell-substrate adhesion markers is due to the increased contraction forces 5. This Enhancement and featuring to be no deformable under traction forces makes cells to proliferated, result in lower speed on stiff substrate 6, 7.

CONCLUSIONS

Cancer cells adapt themselves to different ECM characteristics which is a key feature in metastasis process. Results may be applied in diagnostic and treatment plans in which tumor stiffness is regarded as a biomarker.

ID: 15276 PIN: 41

LANDSCAPE AND PROGNOSTIC SIGNIFICANCE OF COEXISTING MUTATIONS IN PEDIATRIC MLL-REARRANGED AML

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BACKGROUND-AIM

In pediatric acute myeloid leukemia (AML), MLL (KMT2A) rearrangements are among the most frequent chromosomal abnormalities; however, knowledge of the genetic landscape of MLL-rearranged AML is limited.

METHODS

We performed whole-exome sequencing (n=9) and targeted sequencing (n= 56) of samples from pediatric patients with MLL-rearranged AML enrolled in JPLSG AML-05 study. 338 genes, among which were previously reported, including putative driver genes, were analyzed by targeted sequencing.

RESULTS

We identified 115 mutations (2.1 mutations/patient), with mutations in signaling pathway genes the most frequently detected (60.7%): FLT3 (n = 13, 23.2%), NRAS (n = 11, 19.6%), KRAS (n = 9, 16.1%), PTPN11 (n = 6, 10.7%), CBL (n = 5, 8.9%), and BRAF (n = 1, 1.8%). Mutations in genes associated with epigenetic regulation (SETD2, ASXL1, ASXL2, BCOR, BCORL1, KDM6A, CREBBP, and EP300) (21.4%), transcription factors (SPI1, WT1, MECOM, GATA2, and RUNX1) (16.1%), and the cohesin complex (STAG2, RAD21, and SMC3) (8.9%) were also commonly detected. Interestingly, all MLL-ELL patients had at least one mutation of a signaling pathway gene, and all three STAG2 mutations were restricted to MLL-ELL patients, suggesting that the distribution of coexisting mutations differs according to MLL fusion partner. Patients with pediatric MLL-MLLT3-rearranged AML with coexisting mutations (n=16) exhibited significantly shorter relapse-free survival (P=0.048) and overall survival (P=0.046) than those without such mutations (n=9).

CONCLUSIONS

MLL-MLLT3-rearranged AML is categorized as an intermediate risk group, therefore, screening for coexisting mutations may enable improved risk assessment for these patients. These data provide important insights into the genetic basis of pediatric MLL-rearranged AML and suggest therapeutic strategies for this disease.

ID: 15010 PIN: 42

SPIKES IN EEG TEST RESULTS OF PATIENTS WITH ADHD SYMPTOMS

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BACKGROUND-AIM

Symptoms of Attention Deficit/Hyperactivity Disorder (ADHD) include inattentiveness, hyperactivity and impulsiveness. When patients are first referred for evaluations of ADHD, physicians usually gather information regarding to the patients' inattention and hyperactivity level in school and family settings, along with their clinical observations. This information depends heavily on patients' behavior and is rather subjective. When making diagnose of ADHD, such information might not be sufficient as other neurological disorders (e.g. Epilepsy) might also cause inattentive and hyperactive symptoms similar to that of ADHD.This study aims to look into the EEG results of a group of patients who were reported to show inattentiveness and/or hyperactivity, and to see the percentage of patients with abnormal spikes in their EEG results amongst all participants.

METHODS

(1)Patients' attention performance and hyperactivity level were evaluated by parents and schoolteachers using SNAP-IV questionnaire. SNAP-IV scores were then calculated by a psychologist to determine whether their inattention and hyperactivity behavior were significant. (2)Patients with significant inattention and/or hyperactivity scores were selected to be participants of the current study. EEG test results of these participants were collected and analyzed by an EEG technician.(3)The number of participants whose EEG results show spikes was recorded, and the ratio of these participants to the total amount of participants with abnormal inattention and/or hyperactivity level was calculated.

RESULTS

The result shows the percentage of participants who demonstrate symptoms of ADHD but also have abnormal spikes in their EEG test results is 7%. Moreover, these participants with spikes in their EEG scored high in both inattentive and hyperactive sub-scale in SNAP-VI questionnaire.

CONCLUSIONS

The result of this study shows that some individuals reported to be inattentive and/or hyperactive might have abnormal spikes in their EEG results, which could be signs of other neurological disorders other than ADHD. Observations of patients' behavior might not be sufficient when making diagnosis, results from objective examinations like EEG could increase the effectiveness and accuracy of diagnosis.

ID: 15051 PIN: 43

X-LINKED CHRONIC GRANULOMATOUS DISEASE INDUCED HEMOPHAGOCYTIC LYMPHOHISTIOCYTOSIS :A RARE CASE REPORT

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BACKGROUND-AIM

Hemophagocytic syndrome(HS) ,also known hemophagocytic lymphohistiocytosis (HLH),is an uncommon disease of hematologic disorder but potentially fatal syndrome despite treatment. HLH can be either primary, an inherited heterogenous autosomal recessive disorder, or secondary, associated with infections (ex.EBV),malignancies, autoimmune diseases. The mechanism of hemophagocytic syndrome is remain unclear. Hemophagocytic syndrome(HS) charactered fever, splenomegaly, anemia in the beginning and follow by pancytopenia,and hemophagocytosis in bone marrow or in lymph nodes or in liver. But it was seldom described in peripheral blood smear.

METHODS

Lab data show elevated WBC , decreased Hb ,normal platelet count and no abnormal finding in differential count in the first few week. Abnormal liver function was observed. Lab data display T-Bil 5.8mg/dl, LDH 776U/L(and reach 1332 U/L next day), TG 318 mg/dl, but normal Amylase and lipase. Ferritin higher than normal range from 17 to 209 times was also observed. But mild decrease in fibrinogen.(189mg/dl,normal range:200-400). All the data indicated patient may be a case of HLH. Therefore, the patient had bone marrow aspiration for examination.

RESULTS

The 1 years old boy present recurrent infection from 1 month after birth, including TB, influenza and Burkholderia cepacia infection. He still had recurrent infection during admission. Lab data show elevated WBC , decreased Hb ,normal platelet count and no abnormal finding in differential count in the first few week. Abnormal liver function was observed. Lab data display T-Bil 5.8mg/dl, LDH 776U/L(and reach 1332 U/L next day), TG 318 mg/dl, but normal Amylase and lipase. Ferritin higher than normal range from 17 to 209 times was also observed. But mild decrease in fibrinogen.(189mg/dl,normal range:200-400). All the data indicated patient may be a case of HLH. Therefore, the patient had bone marrow aspiration for examination which bone marrow smear and biopsy section reveal hemophagocytosis with all lineages of blood cell. Peripheral blood smear display atypical lymphocyte at early phase and then found phagocytosis, apoptosis cell, larger monocyte, and high percentage of monocyte in late phase.

CONCLUSIONS

The major problem of 1 years old patient was recurrent infection and can not be controlled. Secondary HLH in Taiwan was usually induced by EB virus infection. But this case had no evidence in EBV or CMV infection. Further examination for etiology found that he had CYBB(gp91) gene deletion mutation (X-linked chronic granulomatous disease)(X-linked CGD). His mother is carrier who receive mutation gene from maternal relatives. This is the first reported about secondary HLH which was induced by a rare X-linked CGD in Taiwan. And it is also the first reported on finding phagocytosis in peripheral blood smear.

ID: 15065 PIN: 44

MOLECULAR CHARACTERIZATION OF ROTAVIRUSES AMONG CHILDREN UNDER 5 YEARS WITH GASTROENTERITIS IN KENYATTA NATIONAL HOSPITAL, KENYA

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BACKGROUND-AIM

Severe diarrhea is common among children under five years worldwide and the major cause remains infection from rotavirus. It is estimated that rotaviruses cause 215,000 deaths annually worldwide. Around 200,000 deaths occur in Africa alone. Since the introduction of the rotavirus vaccine in 2014 in Kenya, there has been a significant decrease in deaths caused by rotavirus.
Objective
Molecular characterization of genotypes strains after the introduction of vaccine at KNH.

METHODS

Materials and Methods
Study design: Cross sectional
Sample size: 355 participants (children< 5yrs).
Study area/site: Kenyatta National Hospital, Nairobi County which included Both Outpatient pediatric clinic and pediatric wards
Recruitment and consenting procedures: The children, both inpatient and outpatient less than five years old were identified through the hospital clinicians from the wards, consented by the same clinicians
Laboratory procedures: Stool samples were collected were tested by EIA, NSP3 qRT-PCR, one step multiplex qRT-PCR genotyping assay and to whole genome sequencing using next generation sequencing.

RESULTS

Results
The statistical analysis by chi square showed no statistical significance of rotavirus infection between gender, inpatient and outpatients. The prevalence of rotavirus by EIA was 12.70% while qRT-PCR was 28%. There was high prevalence of G1, followed by G2, G3, and G9 while there were some mixed infection. The P type P8 was most prevalent followed by P4 and P6 although there were mixed P infection. The G-P combination showed that G1P [8] was more prevalent followed by G2P[4], G3P[6] and G9[P8]. There also some mixed infections.

CONCLUSIONS

The prevalence of Rotavirus was 12.7% and the most prevalent genotype was G1P[8].

ID: 15080 PIN: 45

TITRATION OF IGG BLOOD GROUP ANTIBODIES AFTER THE INACTIVATION OF IGM ANTIBODIES USING DITHIOTHREITOL (DTT).

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BACKGROUND-AIM

Determining the concentration and reactivity strength of IgG antibodies in patient's plasma is very useful in monitoring ABO incompatibility in renal transplantation and to determine the severity of Haemolytic Disease of the Foetus and the Newborn (HDFN) due to ABO incompatibility. Dithiothreitol (DTT) dissolves IgM antibody disulfide bonds and eliminates IgM activity, while leaving IgG antibodies intact. This study is aimed to determine if there is a significant difference in IgG and IgM antibody levels between DTT-treated patient's plasma and untreated plasma and to compare the results obtained with the conventional test tube technique (CTT) against the column agglutination technique (CAT).

METHODS

385 plasma samples from patients having blood groups O, A or B where first treated with DTT , at a concentration of 0.01M, to eliminate IgM antibodies and then titrated for the presence of anti-A and/or anti-B antibodies. The CTT method was further tested with polyspecific anti-human globulin reagent (AHG) to confirm the presence of IgG antibodies. As a control, in both techniques, untreated plasma diluted in phosphate buffered saline (PBS) was also titrated.

RESULTS

The results showed that DTT treatment successfully inactivated IgM antibodies without affecting the activity of IgG antibodies. Around 50% of the samples gave a negative result after treatment with DTT in both CAT and CTT techniques thus signifying that only IgM antibodies were present in the plasma. Roughly, 30% of the samples in both techniques gave a reduction in the titre end point after DTT treatment. This indicated that a mixture of IgG and IgM antbodies were present in the patient's plasma and only IgG antibodies were left after DTT treatment. Approximately, 17% of samples in both techniques indicated the presence of IgG antibodies since the same titre endpoint was recorded before and after DTT treatment. The result obtained also showed a good comparison between the CAT and the CTT AHG titres.

CONCLUSIONS

Since the procedure is simple and rapid, DTT treatment proved a good routine test for the inactivation of IgM antibodies. Between CAT and CTT, CAT was preferred for titration of IgG antibodies since it provided more sensitive results and was less time consuming than CTT.

ID: 15084 PIN: 46

THE IMPORTANCE OF UMBILICAL CORD COILING DOCUMENTATION

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BACKGROUND-AIM

Introduction:
The Umbilical cord (UC) is the vital link between the fetus and placenta with an average length of 50-70 cm, depending on gestational age. Cut sections show two umbilical arteries which remove oxygen poor blood from the fetus, and one vein, which carries oxygen rich blood to the fetus coiling (spiralization) of the umbilical cord is visible from 7 weeks post-conception. Etiology of coiling is discussed as due to fetal movement, active or passive embryonic torsion, umbilical vascular growth, muscle fibers in the arterial wall and genetic factors.
In literature it is postulated that umbilical cord coiling is associated with fetal growth restriction (FGR) and intrauterine fetal death (IUFD).
In the Amsterdam workshop consensus 2016, perinatal pathologists agreed upon a standardized definition on umbilical cord coiling and if possible coiling direction, where hypercoiling is defined as ε3 coils per 10 cm, and undercoiling as δ1 coil per 10 cm. Furthermore they agreed upon inclusion of coiling in macroscopic placental and fetal reports on pathological departments.
At the Department of Pathology, Center for Perinatal and Pregnancy related Pathology, Oslo University Hospital (OUS), technicians prepare fetal autopsies by taking photographs, measurements and descriptions following a standardized procedure, UC coiling included.
My aim is to emphasize the importance of a standardized procedure on umbilical cord documentation in assistance of fetal autopsies for the diagnosis made by the perinatal pathologist.

METHODS

Method:
1. Assessment of the UC at the fetal abdominal wall and further course,
2. Description of the color,
3. Measurement in length and diameter,
4. Coiling (and coiling direction) of the UC,
5. Photo documentation of the UC.

RESULTS

UC coiling (hypocoiling and hypercoiling) is associated with fetal growth restriction (FGR) and intrauterine fetal death (IUFD).

CONCLUSIONS

Standardized documentation by the technician is important to make umbilical cord coiling reproducible and comparable on an international platform for technicians. It supports the pathologist to optimize diagnosis, may help clinicians in patients follow up in next pregnancies. Furthermore it may contribute to research on recurrence risk and to reduce FGR and IUFD.

ID: 15106 PIN: 47

DEVELOPMENT OF NOVEL MULTI-TEST VITROS® XT CHEMISTRY PRODUCTS SLIDES* TO ENHANCE PEDIATRIC TESTING

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BACKGROUND-AIM

Having sufficient serum or plasma volume in pediatric samples is an ongoing challenge for the clinical laboratory to avoid quantity not sufficient specimens, especially due to the higher hematocrit levels in newborns. One path to alleviate these concerns is to reduce the sample volume required for testing. A series of new VITROS XT Chemistry Products Slides with dual test capability have been developed that are intended to reduce sample size while maintaining analytical performance versus a conventional single assay test element. The six new XT products are the VITROS XT Chemistry Products UREA-CREA Slides*, ALTV-AST Slides*, TRIG-CHOL Slides*, ALB-TP Slides*, GLU-Ca Slides*, and TBIL-ALKP Slides*.

METHODS

These new XT Slides are unique in that they allow two tests to be run in a single test element with smaller sample volume requirements on an automated analyzer. One enhancement for pediatric testing for the new XT Slides is the total sample volume required can be reduced with a smaller test element (0.675 cm2). The total sample volume to run the twelve XT Slides is 45.6 uL ranging from 2.7 uL for GLU to 5.0 uL for ALKP, and decreasing the sample volume by 49% from the low 89.5 uL sample volume required for the current VITROS Slide products. A second enhancement for pediatric testing is that the XT Slides are run on the new XT 3400 Chemistry System* and XT 7600 Integrated System* which do not require external water connections and are compatible with pediatric departments.

RESULTS

The new XT Slides are also planned to maintain the same analytical performance observed with the current VITROS Slide products. We evaluated the accuracy of patient serum samples (UREA: n=124, 2.6 - 106.0 mg/dL; CREA: n=134, 0.13 - 13.68 mg/dL) on the XT 3400 Chemistry System# compared to the VITROS Chemistry Products BUN and CREA Slides. The XT UREA-CREA Slides showed excellent correlation with the BUN and CREA Slides. XT UREA-CREA = 0.999 x VITROS BUN + 0.68; (r) = 0.999 for UREA; XT UREA-CREA = 0.986 x VITROS CREA - 0.01; (r) = 1.000 for CREA. The other five XT Slides show similar accuracy versus their corresponding VITROS Chemistry Products Slides.

CONCLUSIONS

With these added features and performance, the new VITROS XT Slides will provide an enhancement to pediatric testing in the clinical laboratory.

ID: 15154 PIN: 48

STUDY OF CRYPTOPORIDIASIS IN A PEDIATRIC POPULATION WITHOUT A CRITERIA FOR HOSPITAL ADMISSION FROM PRIMARY CARE

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BACKGROUND-AIM

Cryptosporidium is a protozoan belonging to Phylum Apicomplexa that causes a diarrheal disease called cryptosporidiosis. Two species infect humans: Cryptosporidium hominis (formerly Cryptosporidium parvum genotype 1), which infects only humans and C. parvum (formerly C. parvum genotype 2), which infects humans and animals.
The infection, in immunocompetent individuals, causes a generally self-limiting diarrheal process.
Cryptosporidiosis is a disease predominantly of fecal-oral transmission, although it also results from animal-person transmission or from contaminated water.
The aim was to know the prevalence of cases of cryptosporidiasis in the age group of 6-7 years, with the idea of extending the routine study of the parasite to this age group.

METHODS

We studied 181 samples of children aged 6-7 years referred to the Biochemistry Department of our hospital in the context of diarrheal disease. The samples were remitted in transport medium with SAF, and studied by concentration and investigation of the presence of oocysts by microscopy after Kinyoun staining (acid-alcohol modified resistance).
All the studies belonged to children without criteria of hospital admission from primary care.

RESULTS

Of the 181 samples studied, 60 (33.1%) were positive, of which: 39 (21.5%) corresponded to Cryptosporidium spp, 8 (4.1%) to Blastocystis hominis, 2 (1.1%) to Endolimax nana, 4 (2.2%) to Enterobius vermicularis, 11 (6.1%) to Giardia lamblia, and 1 (0.6%) Hymenolepis nana.

CONCLUSIONS

The prevalence of diarrheal disease due to Cryptosporidium spp is very high in the age group of 6-7 years, which would make it advisable to study the parasite routinely in this age group.
Other routes of transmission other than fecal-oral should be considered in this age group.

ID: 15156 PIN: 49

INFLUENCE OF FETAL SEX ON MARKERS OF RISK USED IN TRISOMY 21 PRENATAL SCREENING

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BACKGROUND-AIM

In first trimester combined screening (FTCS), biochemical and ultrasound markers are used that are modified by different factors such as weight, twin, smoking... There are few studies that have evaluated the impact that these differences in the prenatal chromosomal abnormalities according to the fetal sex can have on the final results of the programs, much less their importance from the point of view of cost-effectiveness.
The aim is to analyze the influence of fetal sex on the markers and the repercussion on the result of the screening.

METHODS

Observational, descriptive and retrospective study (2013-2015). Multiple gestations are excluded. Variables analyzed: nuchal translucency measurement, free human chorionic gonadotrophin (®-HCG) concentration and pregnancy-associated plasma protein A (PAPP-A) and their median corrected multiples (MoM). We compared the medians of the variables in gestations with male and female fetuses.

RESULTS

The medians of the corrected MoM (normalized value of markers according to gestational characteristics) are higher in pregnancies with female fetus in both the PAPP-A and the free ®-HCG. 23.62% increase in the median of the corrected free MoM ®-HCG and 3.65% in the median of the MoM PAPP-A corrected in gestations with female fetuses. This increase is observed both in gestations with affective fetus and no affection.
The detection rate for CC1ºT for T21 in pregnancies with male fetuses was 86.9% with a false positive rate of 3.36% while for pregnancies with female fetuses it was 90.9% and of 4.10%, respectively.

CONCLUSIONS

The increase, specially, in free ®-HCG levels leads to an increase in detection rate and false positive rate in gestations with a female fetus. The application of a correction factor by sex requires cost-effectiveness studies.

ID: 15350 PIN: 5

ANTIBIOGRAM TREND ANALYSIS OF CARBAPENEM-RESISTANT KLEBSIELLA PNEUMONIAE FROM 2015-2017: EXPERIENCE OF A REGIONAL TEACHING HOSPITAL IN HSINCHU

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BACKGROUND-AIM

The antibiogram is a periodic summary of antimicrobial susceptibilities of local bacteria isolated in the clinical microbiology lab. It is often used to assess local susceptibility rates, as an aid in selecting empiric antibiotic therapy and to monitor resistance trends. Carbapenems, a member of B-lactam class of antibiotics, are considered as the last line of defense against multi-drug resistant bacteria. The most common carbapenem-resistant Enterobacteriacea (CRE) species is Klebsiella pneumoniae (CRKP).This study aims to help medical institutions, by antibiogram analysis, be alerted to CRKP and formulate efficient infection control measures early.

METHODS

By working with our Information Technology department via the Whonet system, a statistical report format was constructed. We could analyze the isolation rate and trend of the target strain in a specific period. The results were reported and traced in group meetings regularly to provide timely and effective clinical information. The top three CRE isolated from clinical specimens collected during 2015 to 2017 were Klebsiella pneumoniae 65.6%, Enterobacter spp. 16.2%, and Aeromonas spp. 6.1%. The antibiogram is further analyzed for CRKP.

RESULTS

The average isolation rates of CRKP from 2015 to 2017 were 4.0%, 3.8% and 6.85%, respectively. The monthly rate kept above 5% since Apr 2017. There was a special strain noteworthy. This strain was susceptible to amikacin, trimethoprim/sulfamethoxazole and tigecycline; resistant to cefotaxime, ceftazidime, cefepime, imipenem, meropenem, gentamicin, ciprofloxacin, and piperacillin/tazobactam. It was first noted in May 2016 and kept identified every month since Aug 2016. This strain accounted for 22.2% and 41.6% of all CRKP in 2016 and 2017. The specimen type in 2016 vs 2017 were as follows: sputum 56%, 53%; urine 16%, 23%; abscess 19%, 3%; blood 5%, 17%; and others 4%, 4%.

CONCLUSIONS

The rise of CRE isolation rate necessitate an intensive follow-up surveillance. A particular strain of CRKP was widely spread and hard to be eliminated by the basic infection control measures. Sputum and urine were the main sources of isolation. However, the ratio from blood has increased from 5% to 17%, which should arouse attention of clinicians to prevent invasive infection.

ID: 15158 PIN: 50

OCULAR MANIFESTATIONS IN CHILDREN WITH PERSISTENT DIARRHEA SYNDROME DUE TO GIARDIA LAMBLIA

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BACKGROUND-AIM

The clinical manifestation of Giardia lamblia infection is mainly intestinal, with episodes of acute or chronic diarrhea, hyporexia, abdominal pain and intestinal malabsorption syndrome. However, extraintestinal manifestations are also described, such as eye pain, arthralgias, allergic reactions and urticaria.
The aim of this study was to evaluate the association between giardiasis and ocular manifestations in children with chronic or persistent diarrhea syndrome.

METHODS

The study included 13 children diagnosed with giardiasis based on microscopic and molecular studies in the context of the study of 750 children with chronic or persistent diarrhea syndrome attended in a period of one year (May 2016-May 2017) and belonging to our area sanitary.
The clinical data were obtained by reviewing the medical records, collecting the following variables: age, sex, origin, symptomatology and duration of diarrhea.
The statistical study was performed by comparing groups with the Pearson Chi-square test with the SPSS program in which the ocular alterations presented in the group of children with giardiasis (7) and in the group without giardiasis were analyzed (737).

RESULTS

Of the 750 children studied, 7 (0.93%) presented eye disorders, in six of them associated with Giardia Lamblia infection and in one diagnosed with functional diarrhea. All of them went to the Emergency Service of their health center in the days before the abdominal symptoms due to eye symptoms in the form of red eye and eye pain, their ages were between 2 and 7 years.
All were diagnosed with allergic conjunctivitis and treated with antihistamine eye drops with improvement of symptoms.
Pearson's Chi-square test showed a statistically significant association between giardiasis and eye disorders (Chi Square 421, $p < 0.05$).

CONCLUSIONS

The clinical ocular manifestations of Giardia lamblia infection are common in children with persistent diarrhea, in our study more than half (53.86%) of the children presented ocular symptoms days before the diagnosis of giardiasis.
A careful history of children with persistent diarrhea and eye disorders should be carried out and studied, avoiding a delay in diagnosis and thus reducing the high probability of transmission of the parasite mainly within the pediatric population.

ID: 15184 PIN: 51

MAGNITUDE OF CYTOPENIAS AMONG HIV-INFECTED CHILDREN IN BAHIR DAR, NORTHWEST ETHIOPIA: A COMPARISON OF HAART-NAÏVE AND HAART-EXPERIENCED CHILDREN

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BACKGROUND-AIM

AIDS, caused by HIV, is a multisystem disease that affects hematopoiesis. The aim of this study was to assess cytopenias among HIV-infected children who had a follow-up at Felege Hiwot Referral Hospital, Bahir Dar, and northwest Ethiopia.

METHODS

An institution-based cross-sectional study was conducted between April and May 2013. Systematic random sampling method was used to select the study participants. Descriptive statistics, independent t-test as well as chi-square and logistic regression were used for analysis. A p-value <0.05 was considered as statistically significant.

RESULTS

A total of 224 children (112 highly active antiretroviral therapy [HAART]-naïve and 112 HAART-experienced) participated in the study. The magnitude of anemia, thrombocytopenia, neutropenia, leukopenia and pancytopenia among HAART-naïve HIV-infected children were 30.4%, 9.8%, 8%, 4.5% and 1.8%, respectively. The overall prevalence of anemia, neutropenia, thrombocytopenia, leukopenia and pancytopenia were 29.5%, 8.9%, 8%, 4.5% and 1.4%, respectively. Cluster of differentiation-4 percentage and mean corpuscular volume were significantly different between HAART-experienced and HAART-naïve children. Being of younger age and severely immunosuppressed were risk factors of anemia.

CONCLUSIONS

Anemia was the most common cytopenia, followed by neutropenia. Severe immunosuppression and younger age were significantly associated with anemia. Therefore, emphasis should be given for investigation and management of cytopenias in HIV-infected children, particularly for those who are immunosuppressed and of younger age.

ID: 15315 PIN: 52

AVAILABILITY EVALUATION OF ADENOVIRUS RAPID TEST IN CLINICAL PEDIATRICS

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BACKGROUND-AIM

Adenovirus infection prevails between winter and summer,and often occurs in infants and kids.About 10% of those develop febrile respiratory disease,with symptoms mimic other viruses causing respiratory tract infection(RTI).Among all diagnostic tools,virus culture takes more time,serological test requires paired sera ;thus less practical,and molecular assay costs high.A rapid test,able to help clinicians differentiate between adenovirus with other pathogens,is in urgent need to improve healthcare quality and reduce unnecessary waste of medical resources.This study was to investigate immunochromatographic assay(ICT) for rapid screening of adenovirus in children with RTI.We hope to establish a protocol to assist clinical diagnosis and treatment.

METHODS

ICT,based on highly specific and sensitive antigen-antibody reaction,was developed for detection of adenovirus in samples by use of colloidal gold-labeled monoclonal antibody probe.The results could be easily judged by the presence of a black colored test line.According to the package inserts,compared with virus culture, its relative efficacy for respiratory adenovirus antigen detection was as follows:sensitivity 100%, specificity 99.2% and accuracy 99.5%,respectively.From Feb 2 to Feb 22,2018, throat specimens collected from pediatric patients under age 12, suspected of adenovirus infection,were tested via the ICT rapid assay.The positive rate was calculated; meanwhile,the white blood cell (WBC) count and high sensitivity C-reactive protein(hs-CRP) value of each sample were collected.

RESULTS

A total of 32 specimens were collected.Thirteen of those were tested positive with positive rate of 0.6%(13/32).Among the 13 positive cases,hs-CRP increased in 10(76.9%;10/13),ranging between 2.901-11.764mg/dL;WBC count increased in 7(53.8%;7/13),ranging between 11.64-20.07K/㎕.Only 6 subjects of those 10 with high hs-CRP also expressed increased WBC count(60%;6/10).

CONCLUSIONS

Adenovirus is highly contagious and causes a considerable burdens.The positive rate in this study was up to 40.6% with low cost.Using a comparatively effective and rapid method,is important to enhance the surveillance of RTI,which helps in outbreak control and viral epidemiology monitoring,so that implementation of effective prevention measures and excellence in medical quality would be achieved.

ID: 14771 PIN: 53

ANTIMICROBIAL SUSCEPTABILITY OF CSF AND PLEURAL FLUID ISOLATES AT MULAGO HOSPITAL (NOV.2015- JAN2017)

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BACKGROUND-AIM

A descriptive cross-sectional study was done on 1151 records of sample results of cerebral spinal fluid and Pleural fluid done at Mulago Hospital Department of Microbiology from Nov.2015 to Jan 2017, to determine the bacterial/fungal agents associated with infections in these sites and their antibiotic susceptibility.

METHODS

Laboratory records of cerebral spinal fluid and Pleural fluid results were retrieved and analyzed. The variables of interest were the growth isolates, frequency and their antibiotic susceptibility.
The specimens included 740 cerebral spinal fluids and 411 pleural fluids samples.

RESULTS

A total of 1151 specimens including 740 CSF and 411 pleural fluids were received during the study period. Of these 64 (6%) had growth on culture, including 38 and 26 Pleural fluid samples. The most frequent isolates were Staphylococcus aureus (34%), Enterobactriaceae (30%), Streptococcus pneumoniae (14%). Others were, Cryptococcus neoformans (which was isolated only in CSF), ungrouped Streptococcus spp, Streptococcus pyogens and Pseudomonas aeruginosa. Resistance of the strains to commonly used antibiotics was prevalent. There was poor susceptibility to Penicillin (5-10%) and Cotrimaxazole (30%).Resistance to Vancomycin was detected at 20% and for Ceftriaxone 20%. No resistance was detected to Imipenem.

CONCLUSIONS

In conclusion, it was found that pleural and CSF fluids infections are likely to be high in Uganda and are a cause for worry, because of the increasing poor susceptibility of the organisms to antibiotics. Culture and sensitivity should be encouraged in all hospitals in Uganda to determine the causative organisms and determine the antibiotic susceptibility, so as to guide the clinicians on therapy and control.
Key words: Cerebral spinal fluid, Pleural fluid, growth isolates, antibiotic susceptibility.

ID: 14793 PIN: 54

MOLECULAR EPIDEMIOLOGY OF COMMUNITY-ASSOCIATED METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS MASTITIS IN TAOYUAN, TAIWAN

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BACKGROUND-AIM

Staphylococcus aureus is the most common pathogen involved in skin and soft tissue infections. Presently, methicillin-resistant Staphylococcus aureus (MRSA) has become the major antimicrobial therapies problem in Mastitis. We conducted a study to characterize the molecular epidemiology of MRSA mastitis isolates from the community associated MRSA (CA-MRSA) in North Taiwan.

METHODS

Samples were collected from the microbiology laboratory. Total of 39 outpatients were identified with MRSA mastitis infections. For molecular characterizations analysis, polymerase chain reaction were using to determined different isolates in the Staphylococcus cassette chromosome mec (SCCmec) , Staphylococcus protein A (spa) gene and strong epidemiologic association panton valentine leukocidin (PVL) gene.

RESULTS

Overall, the SCCmec typing revealed four types of SCCmec including SCCmec III (9, 23.10%), SCCmec IV (4, 10.3%), SCCmec V (1, 2.5%), and SCCmec VT (25, 64.1%). While, all of the community associated MRSA isolates were harbored PVL gene (100%). The identification of major spa type were t437 (n = 39, 97.4%), only one isolate was t019 type.

CONCLUSIONS

Mastitis can be caused substantial discomfort for the affected mother and her baby. Delayed, inappropriate or inadequate treatment may result in breast tissue damage, recurrence, and substantial cost. More concerning, natural selection and evolution of antibiotic resistance in bacteria and some strains have become resistant to the newest antibiotics. These variables are also important in terms of maternal and child health. Suggest more laboratories investigated and antibiotic therapies considered are need.

ID: 14795 PIN: 55

INVESTIGATION OF WOUND BACTERIAL CULTURE IN PRISONS IN CHANGHUA AREA IN CENTRAL TAIWAN

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BACKGROUND-AIM

In order to take care of the health of prisoners in Taiwan prisons, both prisons and hospitals collaborated in medical services and the hospital provides prisons for prisoners in Taiwan with various medical services. Therefore, different out-patient services are provided in prisons, including General Medicine, Gastroenterology, Infectious Diseases, Dermatology, etc. In addition to physicians' on-site diagnosis, the doctor will give inspection orders, including blood tests, urine tests, sputum test and bacterial culture. In prisons oftentimes inmates will have skin and wounds problems. The doctor will take a wound specimen for bacterial culture, and after the results are determine, the doctor will treat the infection.

METHODS

The purpose of this study was to determine whether there was a difference between the results of bacterial culture in prisoners and general outpatients and inpatients because of the special living conditions and the large number of people. This study investigated 483 prisoner' wound specimen culture data in 2016-2017 to analyze positive rate, negative rate, strain distribution epidemiological survey.

RESULTS

The total number of wounds in this survey was 479, with negative results of 27 (27/479; 5.6%) and positive results of 452 (452/479; 94.4%). The strain distribution was 74.6% (337/452)MRSA(Methicillin Resistant Staphylococcus Aureus), 13.1% (59/452) Streptococcus pyogenes, 7.7% (35/452) Staphylococcus aureus, 1.3% (6/452) Enteric bacteria, 0.9% (4/452) Coagulase-Negative Staphylococci, 0.7% (2/452) Streptococcus agalactiae, and 0.7% (3/452) for Glucose-nonfermentative Gram-negative bacilli, 0.4% (2/452) for Gram Positive Bacilli. Yeast-Like is 0.2% (1/452) and Streptococcus spp. is 0.4% (2/452).

CONCLUSIONS

The results of the present study showed that prisoners had the most wound infections in prisons as MRSA, followed by S.pyogenes, which showed that the environment in prisons was prone to drug-resistant strains, and the proportion of infected persons exceeded that of inpatients. There were indeed epidemiological statistics significance. Infection control department should pay special attention to the trend of pathogens. Prisoners usually lack awareness of the infection process, so the prison health units need continuous advocacy and education.

ID: 14879 PIN: 56

MUTATIONS IN THE QUINOLONE RESISTANCE DETERMINING REGION IN CLINICALLY ISOLATED ELIZABETHKINGIA ANOPHELIS

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BACKGROUND-AIM

Elizabethkingia was named in honor of Elizabeth King who first found bacteria associated with meningitis in infants. There are several strands of Elizabethkingia such as: Elizabethkingia miricola, Elizabethkingia meningoseptica, and Elizabethkingia anophelis. Recently, a multistate cluster of Elizabethkingia anophelis infections has been reported in the Midwest United States and also in a transmission from mother to infant in Hong Kong.
Few studies have looked at the susceptibility of a large collection of Elizabethkingia anophelis isolates. Most of the results from these studies showed some discrepancies between clinical isolates. It is unclear whether such differences are simply a reflection of the methodology, the limited number of strains tested, or natural geographic variation.
In this study, we examined the susceptibilities and genetic profiles of clinical isolates of Elizabethkingia anophelis and determined their mechanisms of fluoroquinolone resistance.

METHODS

During 2015 to 2017, 66 isolates of Elizabethkingia anophelis were collected from bacterial culture at tertiary care centers in northern Taiwan, the Tri-Service General Hospital (TSGH). Minimum inhibitory concentrations (MICs) of antimicrobial agents were determined by Sensititre GNX2F (Thermo Fisher Scientific) following the manufacturer's protocols. Also susceptibility against ciprofloxacin, levofloxacin were established by the microbroth dilution method recommended by the Clinical and Laboratory Standards Institute (CLSI).

RESULTS

A total of 66 representative Elizabethkingia anophelis strains were included in the study. The amino acid substitutions in the QRDRs of the GyrA of these strains and their association with ciprofloxacin/levofloxacin MICs were presented. Fifty strains had mutation on QRDRs of gyrA, leading to an amino acid Ser83Ile substitution; four strains with Ser83Arg substitution in GyrA displayed resistance to all tested quinolones.

CONCLUSIONS

The present study has revealed good correlation between the antibiotic susceptibility profiles and their mechanisms of fluoroquinolone resistance. The RAPD molecular typing result also provided an important foundation for continued surveillance and epidemiological analyses of emerging Elizabethkingia anophelis.

ID: 14894 PIN: 57

IMPROVEMENT OF GROUP B STREPTOCOCCUS ISOLATION IN PREGNANT WOMEN THROUGH PAIRED SPECIMENS AND SUB-CULTURE PROCESS FROM ENRICHMENT BROTH

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BACKGROUND-AIM

Group B streptococcus (GBS) is the most common cause of early neonatal infection. Reducing mortality and other serious complications caused by GBS is associated with the improvement of GBS isolation from clinical specimens of pregnant women. The study intends to improve the GBS isolation rate in pregnant women via two different specimens (vaginal and anal swabs) and sub-culture from enrichment broth.

METHODS

The paired specimens (vaginal and anal swabs) were collected from pregnant women. The specimens were inoculated into GBS Carrot broth for enrich GBS, and sub-cultured onto GBS Carrot / Detect agar. The GBS isolation rate of single specimen and direct agar inoculation was also determined in the study.

RESULTS

The average detection rates of GBS using direct agar inoculation ranged from 11.36% to 21.15% during the period from 2012 to 2016. The positive rates using sub-culture from enrichment broth ranged from 15.70% to 20.00% during the period. The GBS positive rates using paired specimens ranged from 14.98% to 30.35% during the period.

CONCLUSIONS

The GBS positive rates using paired specimens showed the highest positive rate of GBS (30.35%) in 2016. The process of sub-culture from enrichment broth also improved the isolation rate and ascertained the test quality.

ID: 14904 PIN: 58

BIOMARKERS IN IRRITABLE BOWEL SYNDROME

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BACKGROUND-AIM

Irritable bowel syndrome (IBS), the most common functional gastrointestinal disorder, is usually characterized by recurrent symptoms such as abdominal pain, diarrhea and / or constipation. Diagnosis of irritable bowel syndrome is based on the characteristic symptoms, but a valid and reliable biomarker that could confirm the diagnosis would be desirabile.The role of the intestinal microbiota in the pathogenesis of the irritable bowel syndrome represents an interesting area for research and some authors during research call the intestinal microbiota a “virtual organ” as one of the ways that they want to emphasize its importance.The aim of the poster presentation is to define irritable bowel syndrome, subtypes of irritable bowel syndrome, irritable bowel syndrome impact on the quality of life, signs and criteria for determining the types of irritable bowel syndrome, and presentation of potential biomarkers for the diagnosis of irritable bowel syndrome.

METHODS

Anamnestic data, complete blood count, erythrocyte sedimentation, C - reactive protein (highly sensitive), calprotectin, chromogranin, salivary cortozol, cytokines, fecal short-chain fatty acids (FSCFA),interleukin 10 , colonoscopy, irigography, microbiological and parasitological tests.

RESULTS

Research on Croatian territory (continental) was conducted in three studies, and it is considered that about 10% of the population meets the Roman III criteria of the irritable bowel syndrome. A pilot study (one study) was performed on 86 patients (65% women) with IBS, with an average age of 47.76 years (SD = 13.68). Preliminary results have shown that patients with IBS that have higher ESR have lower HRQoL (e.g. more pronounced intestinal symptoms, social and emotional disorders related to the disease).

CONCLUSIONS

There is a growing thesis on how irritable bowel syndrome treatment should be directed at the use of drugs that affect the afferent sensitivity of the intestinal nervous system and the CNS, but more analysis and data are needed to bring forth valid conclusions about their application and effectiveness. FSCFA analysis can be a non-invasive, valid and reliable biomarker for distinguishing healthy subjects from subjects with IBS.It is assumed that mild inflammation in patients with IBS may be detected by a cheap and affordable ES test.

ID: 14909 PIN: 59

RISK FACTORS OF HIV CO-INFECTION AND SEXUAL BEHAVIOURS IN HIV-POSITIVE MEN WHO HAVE SEX WITH MEN WITH GONOCOCCAL INFECTION IN TAIWAN

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BACKGROUND-AIM

During the past decade, the incidence of gonorrhoea has increased in Taiwan, mainly affecting the community of men who have sex with men(MSM). Human immunodeficiency virus(HIV) infection continues to disproportionately affect MSM, and identification of modifiable risk factors for HIV infection among MSM is critical for effective prevention.
The objective of the present study was to describe the cases of gonococcal infection for sexually transmitted diseases in Taiwan, as well as the factors associated with co-infection by the HIV. We also investigated the influence of sexual motives for unprotected anal sex on intended condom use with steady and casual sex partners.

METHODS

A retrospective cross-sectional study was performed of all of the cases of gonococcal infection that were diagnosed in 2015~2016 at the Centers for Disease Control and Prevention, diagnostic tests, and sociodemographic and risk-behaviour questionnaires were analysed.

RESULTS

A total of 541 MSM were observed for a total of 4471 person-years. In the model the following factors were associated MSM with the HIV co-infection: having a concomitant gonorrhoea diagnosis having a positive history of one or more sexually transmitted diseases(5%), having condom to use intentions (for casual sex partners52% and steady sex partners 53%), having engaged in unprotected, insertive anal intercourse (54%), and having engaged in high-risk sexual contacts while under the influence of alcohol or other drugs (46%). Our proposed model of sexual decision-making significantly improved the prediction of behavioral intentions.

CONCLUSIONS

In the present study, a greater incidence of gonococcal infection and HIV co-infection was observed in MSM. Additionally, sexual motives for unprotected anal sex exerted, as expected, a direct, negative effect on condom use intention with casual sex partners. The recent increase in new diagnoses of sexually transmitted HIV infections compared with the decrease in transmission by the use of injected drugs along with the low frequency of condom use, highlights the persistence of high-risk sexual behaviours Therefore, greater emphasis should be placed on the routine screening for sexually transmitted diseases and the targeting of education and health-promotion initiatives to highrisk communities.

ID: 14873 PIN: 6

"DEEP IN THE URINE"

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BACKGROUND-AIM

We performed a study to examine the durability of urine samples.

METHODS

Urine samples were collected from healthy women. The samples were processed under controlled conditions:
• Participants got a bag of standard equipment
• They filled 2 urine test tubes from their one sample
• Samples were processed immediately.
• One tube was cultivated immediately, stored at room temperature (rt) and then cultivated again after 5, 10 and 24 hours
• The second tube was placed in a refrigerator and kept cool for 24 hours before it was cultivated
• Samples were cultivated on Chromagar and incubated at 37 °C for 24 hours
• The bacterial growth on the Agar from the different premises for each sample, was compared and documented by photography.

RESULTS

21 urine samples were collected from healthy women. The results are documented by photography. We have pictures that show the results after cultivation for some of the samples.

CONCLUSIONS

In this study we confirmed the importance of correct storage of the urine sample to get a representative result from cultivation. The study also confirmed that urine samples stored in the refrigerator are durable for at least 24 hours.

ID: 14930 PIN: 60

EFFECTS OF CONCOMITANT DRUG USE OF CLINDAMYCIN(CLDM) AND BENZOYL PEROXIDE(BPO) ON PROPIONIBACTERIUM ACNES

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BACKGROUND-AIM

Propionibacterium acnes is a causative agent of acne vulgaris, Gram-positive anaerobic bacillus found within the indigenous flora of the skin. Treatment has become difficult due to the increase of bacterial strains demonstrate resistance to the therapeutic agent Clindamycin. By using P. acnes extracted from skin samples of the healthy youth (18-24), we investigated the rate of resistance of P. acnes to CLDM as well as the effect of concomitant drug use of CLDM and BPO on the resistant bacterial strains. In this study, the tests of antibiotic susceptibility and the investigation of the efficacy of concomitant drug usage were conducted.

METHODS

Anaerobic culture was confirmed based on as Gram-positive results using Gram staining and catalase production and was further identified by PCR. Antibacterial susceptibility test was conducted based on Clinical and Laboratory Standards Institute (CLSI). Clindamycin hydrochloride was used as the antimicrobial agent, which was adjusted to 128∫g/mL-0.06∫g/mL. The effect of concomitant drug use of CLDM and BPO on the resistant bacterial strains was investigated.

RESULTS

P. acnes was detected in 5 specimens out of the 15 samples. Antimicrobial susceptibility test result showed MICs as such, 128∫g/mL for 1 case, 0.25∫g/mL for 3 cases and 0.03∫g/mL for 1 case. The high MIC value of 1024∫g/mL was observed for BPO. The compound drug of 0.5% CLDM and 1.0% BPO showed the reduced MIC value of 8 ∫g/mL or less.

CONCLUSIONS

It may be assumed that first-line drugs had no therapeutic effect on the development of acne vulgaris as resistant bacterial strains were detected from the normal skin layers of healthy subjects. Combined use of clindamycin and benzoyl peroxide with BPO concentrations above 0.5% resulted in a reduction of the MIC value of Clindamycin with significant improvements in therapeutic effect.

ID: 15024 PIN: 61

CHANGES IN HEPATITIS B VIRUS INFECTION IN IMMIGRANTS AND NATIVE PREGNANT WOMEN IN TAIWAN

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BACKGROUND-AIM

Universal immunoprophylaxis against HBV is regarded as a key element to prevent perinatal HBV infection. Taiwan's national vaccination program with higher coverage rate has successfully decreased the prevalence of hepatitis B infection after 30 years of implementation. The aim of present study was to investigate the trends of HBsAg and HBeAg prevalences, HBeAg rates (defined as a ratio between HBeAg and HBsAg) and HBeAg seroconversion rate in immigrant and native pregnant women to evaluate the impact of immigrants on the hepatitis B vaccination program and to identify weakness and challenges 30 years after the implementation of hepatitis B vaccination in Taiwan.

METHODS

A total of 20,020 test results of hepatitis B surface and envelope antigen (HBsAg and HBeAg) of pregnant women, 2,915 (14.6%) immigrant women, and 17,105 native Taiwanese were analyzed in this 20-year retrospective cohort study.

RESULTS

The prevalence of hepatitis B infection was 12.4% in total. Compared with the rates of earlier cohorts, native women born after July 1986 had significantly lower HBsAg-positivity of 2.4%, and the HBsAg-positivity in the 2011–2015 interval had decreased to 6.9%. Nevertheless, the prevalence of HBV infection remained high. The HBsAg-positivity in immigrants remained as high as 7.1% in the 2011–2015 interval and did not exhibit a significant decreasing trend relative to the earlier period. Higher rates of HBeAg-positivity were found in women from Vietnam and Indonesia (49.4 and 54.5%, respectively) than in native women (30.5%). A total of 183 (83.9%) women in second-parity without seroconversion provided significantly higher HBeAg titres (316 ± 102 s/co) in first-parity compared with the 35 (16.1%) women with seroconversion (HBeAg titres: 173 ± 154 s/co) ($p < 0.001$).

CONCLUSIONS

The prevalence of hepatitis B has remained high in both immigrant and native pregnant women. Immigrant women from Vietnam and Indonesia have higher rates of HBeAg-positivity. To lower the risk of vertical transmission, especially in HBeAg-positive women, new approaches—for example, nucleoside/nucleotide analogue therapy during pregnancy—may be needed.

ID: 15025 PIN: 62

IMBALANCE OF GUT MICROBIOTA OF HIV INFECTED INFANTS IN YAOUNDE

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BACKGROUND-AIM

The immune system becomes compromised through a progressive depletion of CD4+ T lymphocytes (T-helper cells) which gives rise to opportunistic infections. The study aims at establishing the alteration of gut microbiota in HIV infection amongst HIV-positive children aged 3-24months, in Yaoundé.

METHODS

We conducted a cross-sectional and case-control study, carried out from April to November 2013 during which stool samples were collected from both HIV infected and uninfected children, after their parents/guardian's read and signed the assent informed form. After collection, the fecal samples were transported to the bacteriology laboratory of the Yaoundé University Teaching Hospital within 30minutes and cultured using aerobic, strict anaerobic, 10% CO2 and microaerophilic conditions. Microorganism identification was done using laboratory based conventional classical gallery and BioMérieux's API identification kits for identification of Gram positive and Gram negative bacteria.

RESULTS

Out of the 80 children enrolled for the study, 33 (41.25%) were HIV exposed and infected, 15 (18.75%) HIV exposed uninfected infants and 32 (40%) non HIV exposed infants. Among the HIV infected children we mostly identified Lactobacillus spp. 32/33 (96.97%), Streptococcus spp. 28/33 (84.85%) and Bifidobacterium spp. 27/32 (81.81%), with decreased identification of Bacteriodes spp. 11/33 (33.33%). Whereas in HIV negative infants (non HIV exposed) high frequency of Lactobacillus spp. 31/32 (96.88%), E. coli 30/32 (93.75%) and Bifidobacteria spp. 27/32 (84.38%) respectively On the other hand, abnormal bacteria like Shigella spp. (24.24%), Staphylococcus aureus (15.15), Klebsiella spp. (12.12%), Acinetobacter spp. (3.03%), Pseudomonas spp. (3.03%) and Proteus spp. (3.03%) were also identified in HIV positive infants while it was absent in HIV negative children. According to WHO, critically considered bacteria species like Acinetobacter spp., Pseudomonas spp., Klebsiella spp and Staphylococcus aureus were identified only in HIV positive infants.

CONCLUSIONS

There's an imbalance in gut microbiota of HIV infected children with the presence of WHO critically considered pathogenic bacteria whereas none were identified HIV negative children.
Keywords: HIV positive infants, abnormal gut microbiota.

ID: 15132 PIN: 63

PREVALENCE OF ANTIBIOTIC RESISTANCE RATE OF BLOODSTREAM INFECTIONS IN A REGIONAL HOSPITAL IN TAIWAN

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BACKGROUND-AIM

Blood culture is an important clinical basis for diagnosis of sepsis or bacteremia. Recently, the antibiotic resistant bacterial strains have increased rapidly and become a thorny problem because of the antibiotic overuse worldwide. Therefore, this survey provides statistical results for clinicians to understand the antibiotic resistant strains, to achieve better antibiotic use.

METHODS

A total of 10147 cases were collected from January 1st 2016 to December 31st ,2017 in a regional hospital in Taiwan. All blood samples were incubated in the BD BACTEC™ FX blood culture system. The positive samples were used the BD Phoenix 100 for antimicrobial susceptibility test.

RESULTS

In the 10147 of blood cases, 1084 cases were positive (the positive rate was 10.7%). 1169 clinically significant bacteria were isolated which including79 patients infected by two or more bacteria (6.8%). 94 (8%) were considered to be contamination among ER (5.2%), ICU (0.7%) and ward (2.1%). 143 of 1169 bacterial strains (12.2%) were isolated from ER (6.2%), ICU (3.8%) and ward (2.3%) and resistant to the antimicrobial agents.143 isolates were identified: MRSA (6.9%), ESBL- EC (2.6%), ESBL- KP (0.9%), MDRAB (0.6%), VREF (0.4%), CRKP (0.4%), ESBL-PM (0.2%) and CRAB (0.2%). The antibiotic resistant strains isolated ratio of 2017 had declined 9.8% compared to 2016. And the antibiotic resistant strains had also decreased from 8 kinds to 4.

CONCLUSIONS

According to the statistics of Taiwan CDC, the most common antibiotic resistant bacteria in ICU were: MRSA, CRAB and VREF. In our hospital, the most common antibiotic resistant bacteria were MRSA, ESBL-EC and ESBL-KP. It is noteworthy that the CRKP was increased from 0.2% in 2016 to 0.77% by 2017 and this result was consistent with the statistics of Taiwan CDC. We also found that the antibiotic resistant strains isolated in the ER were higher than those in the ICU and ward and the ER contamination rates were higher than those in other wards. Therefore, in order to control the infection, transmission of antibiotic resistant bacteria, we have to reduce the bloodstream contamination, enhance accurate reports of the antibiotic resistant bacteria to clinicians, appropriate given therapy of antibiotics to patients and improving infection control.

ID: 15162 PIN: 64

HAS PRIOR TREATMENT OF CHLAMYDIA LED TO MYCOPLASMA GENITALIUM SUPERBUGS?

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BACKGROUND-AIM

Mycoplasma genitalium causes sexually transmitted infections, and next to Chlamydia it is the second most common microbe associated with urethritis in Western countries. Several studies have shown an association between M. genitalium and cervicitis, endometritis, pelvic inflammatory disease (PID) and tubal factor infertility in women.

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Due to its fastidious nature and slow growth, culturing M. genitalium is challenging, and reliable in vitro data on antimicrobial susceptibility are lacking.

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Despite the similarities between M. genitalium and C. trachomatis, susceptibility to antimicrobials differ. While M. genitalium has a high mutation rate and quickly adapt to overcome new antimicrobials, C. trachomatis remain susceptible.

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For two decades, a single-dose acithromycin regimen was used to treat urethritis and uncomplicated chlamydia infection in Norway. Probably, this has led to emerging macrolide resistance in M. genitalium, due to transmission of resistance or drug pressure.

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Macrolide resistant strains contain substitutions in positions 2058 and 2059 in region V of the 23S rRNA gene. The aim of this study was to establish a molecular test and estimate the prevalence of macrolide resistant strains.

METHODS

A total of 134 urogenital samples, tested positive for M. genitalium by a commercial molecular method (PANTHER; Hologic), were collected from the Dept.of Medical Microbiology at Vestfold Hospital Trust, Norway. The samples were stored by freezing. Most specimens came from outpatients not attending sexually transmitted disease clinics. Of the 134 samples 94 were successfully isolated by Qiasymphony (Qiagen) and mutations detection were done by PCR followed by melting curve analysis to differentiate between macrolide resistant mutants and wild types.

RESULTS

Among 94 M. genitalium strains tested, 52 (55 %, 95 % CI 45 % to 65 %) had macrolide resistant associated mutations.

CONCLUSIONS

The large number of macrolide resistant M. genitalium strains verified in this study is alarming. Our findings emphasize the need for routine antimicrobial resistance testing of all M. genitalium-positive to ensure effective patient management and rational antimicrobial use.

ID: 15165 PIN: 65

OVERPRODUCTION AND BIOCHEMICAL CHARACTERIZATION OF THE CARBAPENEMASES OF ELIZABETHKINGIA ANOPHEILS BLAGOB METALLO-®-LACTAMASE

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BACKGROUND-AIM

Elizabethkingia anopheils is an emerging nosocomial pathogen associated with high mortality, and is inherently resistant to many antimicrobial agents. E. anopheils has been reported to be associated with human disease, especially neonatal meningitis and nosocomial outbreaks. Carbapenem are one of the most commonly prescribed classes of antibiotics, but carbapenem resistance is widespread and increasing. In this study, we focus on carbapenem antibiotics. Three bla genes have been identified in E. anopheils, coding for three extended-spectrum serine-®-lactamase GOB and AmpC ®-lactamases.

METHODS

The Vitek2 automated system (bioMérieux) and matrix-assisted laser desorption-ionization time-of-flight mass spectrometry (bioMérieux) was used for identifying and predicting the antimicrobial susceptibility of E. anopheils. The minimum inhibitory concentrations (MICs) of these isolates were examined using the Vitek2 automated system. The susceptibilities were determined according to the interpretive standards for “other non-Enterobacteriaceae” as suggested by the Clinical and Laboratory Standards Institute (CLSI) guidelines. Real-time PCR and biochemical analysis demonstrate that the three bla genes are actively expressed in vivo as functional®-lactamases.

RESULTS

Twelve isolates of E. anopheils are resistant to carbapenem. (minimum inhibitory concentration (MIC) ε 16 mg/L for imipenem). We found that analysis of relative expression results in real-time PCR and biochemical analysis demonstrate that the three bla genes are actively expressed in vivo as functional ®-lactamases.

CONCLUSIONS

Carbapenem are not suitable antimicrobial agents for treating E. anopheils infections.

ID: 15171 PIN: 66

SURVEY OF PROPHAGE TYPE DISTRIBUTION CORRELATION TO THE PREVALENCE OF CA-MRSA ISOLATES IN A TAIWAN HOSPITAL

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BACKGROUND-AIM

Traditionally SCCmec IV, V, or Vt were belonging to CA-MRSA (Community Acquired Methicillin Resistant Staphylococcus aureus), yet their prevalence was increasing in Taiwan hospital isolates recently. It assumed that the surface protein SasX of CA-MRSA strains is responsible for their transmission. However, our surveillance of CA-MRSA from hospital isolates failed to detect SasX. Since SasX was originally found in S. epidermidis and delivered into S. aureus by a prophage transmission, we proposed that prophage type distribution may consequence to the increasing of CA-MRSA in our clinical isolates.

METHODS

A total of MRSA strains from blood cultures were collected from 2010 (321 isolates) and 2014 (232 isolated). Multiplex PCR was performed to determine SCCmec and prophage types in these isolates.

RESULTS

The numbers of SCCmec II, III, IV, V or Vt types were 50, 140, 78, 45 and 8 for the 2010 isolates and 33, 80, 65, 49 and 5 for the 2014 isolates, respectively. Prophage type Sa4int was not detected in any of our isolates. Different prophage types such as Sa5int and Sa7int may incompatible to co-exist in the same isolate. Further compared the prophage type distribution between 2010 and 2014, percentage of prophage Sa3int were decreasing and Sa2int were increasing among SCCmec IV, V, and Vt isolates.

CONCLUSIONS

No CA-MRSA isolates in Taiwan examined in this study were found to contain the SasX protein or the Sa4int prophage. There was a significant difference in the prevalence of CA-MRSA isolates that carry the Sa2int or the Sa3int prophage. Previous studies showed that Sa2int group prophages were PVL toxin carrier, which was proposed the factor contribute to the increasing ratio of CA-MRSA in hospital isolates. Further assessment of PVL distribution among our SCCmec IV, V, and Vt isolates will be process to examine our hypothesis.

ID: 15194 PIN: 67

DEVELOPMENT OF CROSS HOSPITAL TRANSPORT METHODS FOR LIQUIDIZED CLINICAL SAMPLES FOR DETECTION OF DISEASE-ASSOCIATED ANAEROBIC MICROORGANISMS

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BACKGROUND-AIM

To cooperate with the hospital's policy of centralizing the clinical microbiology laboratory in one central lab, all specimens for detection of aerobic and anaerobic microorganisms are liquidized by different processing strategies depending on types of samples. However, anaerobic microorganisms are more susceptible to oxygen than other microorganisms. We develop a series steps, including samples processing, storage, and transport of liquidized samples with anaerobic microorganisms.

METHODS

Samples in collection swabs are liquidized in THIO broth and then inoculated on AN-BAP and KVLB agar plates respectively. Plates are storage in anaerobic chamber (Coy) and then transport by Rectangular Jar with AnaeroPack (MGC). We compare types of anaerobic bacteria isolated and amount of bacteria between samples in anaerobic chamber (Coy) and in central laboratory respectively.

RESULTS

Commonly disease-associated anaerobic microorganisms including Peptostreptococcus spp., Propionibacterium spp., Clostridium perfringens, Clostridium difficile, Bacteroid fragilis gr., Prevotella spp., Fusobacterium spp., and Veillonella spp. could growth in both anaerobic chamber and central laboratory. The positive rate for isolating anaerobic microorganisms were 12.98% and 13.36% in central laboratory and anaerobic chamber (Coy), respectively. The consistency of results for bacterial culture between two laboratories is 99.62%. Finally, the consistency of amount of bacteria in positive samples between two laboratories is 100%.

CONCLUSIONS

In this study, we have developed the steps for liquidizing and transporting samples for growth of anaerobic microorganisms. Furthermore, we confirmed the possibility for transporting liquidizing samples with anaerobic microorganisms.

ID: 15195 PIN: 68

EPIDEMIOLOGY STUDY OF THE SEROTYPE AND ANTIBIOTIC SUSCEPTIBILITY IN INVASIVE, NON-INVASIVE INFECTIONS AND COLONIZED GROUP B STREPTOCOCCUS

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BACKGROUND-AIM

Streptococcus agalactiae (Group B Streptococcus; GBS) is one of the major pathogens threatening the life of newborns. In addition to causing neonatal diseases, but also in pregnant women, non-pregnant adults and the elderly caused by invasive and non-invasive infection. There are 10 GBS polysaccharide capsular genotypes, the epidemiology of GBS serotypes and drug resistance will vary from country to country and region to region. The purpose of this study is to investigate the distribution of specific GBS polysaccharide capsular genotypes. This finding is important for the GBS prevention, treatment and development of vaccines.

METHODS

We collected consecutive 627 clinical isolates of GBS from our hospital in northern Taiwan for 6 months, including invasive and noninvasive infections and the colonized nature of pregnant women and non-pregnant women. Strains were identified with Phoenix, in the meantime, antibiotic susceptibility tests were performed using disc diffusion methods. Strains DNA extraction at the same time, purified, stored in -80 degrees C freezer.

RESULTS

In this study, we established multiplex PCR for GBS Polysaccharide capsular genes (cps) typing. The results showed that cps serotype VI (34.29%) was the most widely distributed, followed by serotype III (20.89%) and serotype V (15.63%). At the same time, we monitored the antibiotic resistance of GBS. The collected GBS strains were all susceptible to penicillin, ampicillin, vancomycin and ceftriaxone, while 45.91% were resistant to erythromycin and/or clindamycin. The percentages of drug resistance were serotype Ia 10.05 %, Ib 12.79%, II 2.28%, III 34.25%, V 21.92 %, VI 18.26 %, and Non-Typeable 0.45%. If we can simultaneously detect polysaccharide capsular genotype of GBS in the future, we can provide more reference information to clinicians in the choice of treatment antibiotics.

CONCLUSIONS

CRM197-conjugated trivalent GBS vaccine that has commenced phase II clinical trials, was developed for cps serotypes Ia, Ib, and III. If this trivalent vaccine was used in the future, then half cannot produce protection in Taiwan. We must actively develop a GBS vaccine that belongs to Taiwan, or develop a vaccine based on the common protein of GBS.

ID: 15236 PIN: 69

ASSOCIATION OF PEROXIDE ACTIVITIES AND BACTERIALSPERMIA IN SUB NORMAL SEMEN ANALYSIS

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BACKGROUND-AIM

Bacterialspermia has often been associated with sub normal semen analysis but the biochemical basis is poorly understood. This study was to elucidate the relationships between semen quality and seminal fluid peroxide activities, white blood cells count and immature cells count in oligospermic men.

METHODS

Semen analysis was carried out among 92 apparently healthy men among male counterpart of couples undergoing evaluation for infertility. These comprised of 31 men with sperm concentration between 3-5 ×106/ml (severe oligospermia), 61 with 6-18 ×106/ml (oligospemia) while 45 men with proven evidence of fatherhood served as control. Semen samples were collected after average of four days sex abstinence and the analysis was carried out using light microscope at room temprature. Total peroxide and hydrogen peroxide was estimated using FOX2 and dichromate/acetic acid reagents respectively.

RESULTS

The result showed significantly ($p<0.05$) higher white cells, immature cells and percentage of semen that yielded bacteria growth in oligospermic men than that of the control group. The concentrations of semen total peroxide and hydrogen peroxide were also significantly ($p < 0.05$) higher in the infertile groups than the control group. There was direct correlation between the total peroxide and hydrogen peroxide concentrations and white cells, immature cells, percentage of semen that yielded bacteria growth and inverse relationship with the sperm concentration. The linear regression analysis indicated that hydrogen peroxide strongly predicts sperm concentration (CI -1.13 ×105- -0.37×106; $P < 0.05$), motility (CI -1.68- -0.49, $P < 0.001$) in oligospermic men

CONCLUSIONS

Reducing the seminal fluid total peroxide and hydrogen peroxide status could be a major contribution in successful management of asthenotheratoozpermia in addition to antibiotic administration.

ID: 14952 PIN: 7

EVALUATION OF THE PRELUD® AUTOMATED PLATE STREAKER FOR PROCESSING OF URINE SAMPLES

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BACKGROUND-AIM

Plate streakers can improve streaking quality and workflow and decrease workloads. In this study, we evaluated a new automated plate-streaker, PreLUD® (i2a, France), for processing of urine samples.

METHODS

Sixty-nine midstream urine samples were collected from the Taipei Veterans General Hospital(VGH), Taiwan. For manual inoculation, 1 ∫l of a sample was streaked on one each of BAP and EMB plate using a disposable loop. For the automated method, 0.5 ml of a sample was added to 4.5 ml of 0.45% NaCl solution in a tube to make a 10-fold dilution. The liquid handling arm of PreLUD® then streaked 10 ∫l of the diluted sample on each of BAP and EMB plate. The following parameters of the two methods were compared: average time required for processing one sample, growth patterns of pathogens, and pathogen counts. A workflow was designed for daily routine.

RESULTS

With both methods, 90% (62/69) of the samples showed the same growth patterns of pathogens, and 94% (65/69) of the samples yielded the same pathogen counts. Discrete colonies were obtained from 74% of the samples with the automated method; this was 5% higher than the manual method. The automated method required average 24 seconds, while the manual method took 36 seconds to process a sample, a 33% saving in time. The designed workflow was as follow: First, start up PreLUD® at 8:00 a.m.. Then warm up heater, fill up the agar plates, and prepare first batch of sample (10 urine), it spends around 15 min for these preparation work. Next, put first batch of sample onto PreLUD® and press start button for automated process, it's able to manage 360 samples from 8:15 a.m. to 5:00 p.m., average 1.5 min per sample.

CONCLUSIONS

The performance of PreLUD® in processing of urine samples is comparable to that of the manual method. Since it saves a significant amount of time, it is useful for routine clinical work.

ID: 15255 PIN: 70

SURVIVAL AND RECOVERY OF NON ACID-ADAPTED COMMENSAL AND ENTEROTOXIGENIC E. COLI IN A SIMULATED GASTRIC ENVIRONMENT

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BACKGROUND-AIM

Gastric fluid pH serves an important function as an ecological filter that may kill microbial taxa that would otherwise colonise the intestines, thereby shaping the diversity and composition of microbial communities found in the gut. The typical Western diet causes the gastric pH to increase to pH 4-5, and it takes ~2 hr to return to normal (pH 1.5), which may allow potential pathogens a window to traverse the stomach. Given that the pH of the stomach varies postprandially, previous reports may have overestimated the antibacterial effect of gastric juice. Another factor to consider is that in developing countries many people experience hypochlorhydria related to malnutrition and various gastric diseases. Enterotoxigenic E. coli (ETEC) is the cause of traveller's diarrhoea and has a high incidence in South Africa and many other parts of the world. The aim of this study was to assess the acid survival and recovery of commensal E. coli and ETEC exposed to simulated gastric fluid (SGF) of various pHs (1.5, 2.5, 3.5 and 4.5) over a 3 hr time period.

METHODS

E. coli were grown in nutrient-rich medium and then acid challenged in SGF. Metabolic viability was assessed via ATP measurement and respiratory activity (XTT assay), and recovery and proliferation by means of optical density. Sampling was performed at 0, 30, 60, 120, and 180 min post-SGF exposure. At least two biological repeats were performed in triplicate; the unpaired T-test was utilised to analyse the data.

RESULTS

The results of this study showed that commensal E. coli and ETEC are remarkably acid resistant and were able to survive a simulated gastric environment for up to 3 hr in various pHs. The organisms remained viable in all four pHs, and were able to recover and proliferate once placed in a neutral, nutrient-rich environment.

CONCLUSIONS

With decreased gastric acidity, there is a higher probability of pathogen colonization and a resulting change in the gut microbiome. The conclusion of the results foresee the potential increase of food- and waterborne diseases in individuals with compromised gastric function, or who are malnourished or immune compromised. The data herein may possibly help in establishing more precisely the risk associated with consuming bacterial contaminated foods and water in these individuals.

ID: 15270 PIN: 71

IDENTIFICATION OF NOVEL MUTATION IN QUINOLONE RESISTANCE OF ELIZABETHKINGIA MIRICOLA CLINICAL ISOLATES

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BACKGROUND-AIM

Elizabethkingia miricola, a gram-negative, non-motile, non-spore-forming rod, was identified in 2003 in the Mir Space Station. This bacterium has been documented as causing bacteremia and sepsis in immunocompromised patients. The quinolone antibiotics inhibit the bacterial DNA gyrase or the topoisomerase IV enzyme, and have been widely used for treatment E. miricola infection. Owing to widespread use of quinolone antibiotics, E. miricola have developed resistance to this drug in recent years. It has been reported that mutations in gyrA, the gene encodes the A subunit of DNA gyrase, are the most common mechanisms involved in quinolone resistance among gram-negative bacteria, but the mechanism in E. miricola are little known.

METHODS

During 2015 to 2017, 21 isolates of E. miricola were collected from bacterial culture at Tri-Service General Hospital (TSGH). To find the mutation sites that may contribute to resistance, clinical E. miricola isolates from bacterial culture in our hospital were tested for minimal inhibitory concentrations (MIC) by broth microdilution (BMD). The GyrA gene were amplified from the DNA of E. miricola isolates by PCR, and we examined the quinolone resistance-determining regions (QRDRs) of E. miricola by DNA sequencing.

RESULTS

One is an altered gyrase due to a transition at position 83 of the gyrA gene, leading to a Ser83Arg substitution in the gyrase A subunit, while the other is a change at position 87, leading to a Asp87Asn substitution. Clinical E. micricola strains harboing these mutations showed higher MIC values compared to those wild type strains. From these results, we suppose that some mutations of amino acid within the gyrase A gene is the reason of quinolone resistance in E. miricola.

CONCLUSIONS

Our result revealed that two novel mutation sites are associated with the quinolone resistance of E. miricola.

ID: 15376 PIN: 72

USING BIOINFORMATICS TOOLS TO ANALYSIS THE POSSIBLE PROTEIN THAT ARISE PROCALCITONIN LEVEL IN PATIENT WHO INFECTED BY TREPONEMA PALLIDUM

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BACKGROUND-AIM

Treponema pallidum is a spirochaete bacterium with subspecies that cause treponemal diseases such as syphilis, bejel, pinta, and yaws. In clinical, the most popular syndrome is syphilis. And the diagnosis tool are RPR,VDRL, TPPA and TPHA…etc. Rare study used the procalcitonin to be a biomarker. In this study, we tried to use bioinformatics tools to analysis the possible protein that would arise the procalcitonin level.

METHODS

In this study, we used the NCBI genomic database and NCBI Blastp tool, and we collected the gene of lipopolysaccharide as a model. Then we found the similar gene in Treponema pallidum, then translated the gene to protein. Finally, we used the blastp tool to compare the candidate of protein's sequence.

RESULTS

In this study, we found there were 2 possible protein. Even the identities were 22% and 30%, but the ratio of cover were 36% and 39%. According to another studies, once the ratio of cover were over 25%, these proteins would be similar. So we though these two proteins would be possible protein that arise procalcitonin level.

CONCLUSIONS

In this study, we found there were 2 possible protein. Even the identities were 22% and 30%, but the ratio of cover were 36% and 39%. According to another studies, once the ratio of cover were over 25%, these proteins would be similar. So we though these two proteins would be possible protein that arise procalcitonin level.

ID: 15381 PIN: 73

ALTERNATIVE PROTEOLYSIS BY ATG8 AUTOPHAGE IN TRICHOMONAS VAGINALIS

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BACKGROUND-AIM

Autophagy has been shown to be involved in the pathogenesis of several protists, offering prospects for the developments of new drugs targeting autophagy. However, there is no evidence for illustrating functional autophagy in the deep-branching trichomonads. The human parasitic protist Trichomonas vaginalis has been predicted to possess reduced autophagic machinery, with only autophagy-related protein 8 (Atg8) conjugation system required for autophagosome formation. We previously demonstrated that glucose restriction (GR) is able to induce an autophagy-like response in T. vaginalis. In this study, we aimed to characterize the molecular mechanism for regulating autophagy and ultimatelyunravel the biological roles of autophagy in T. vaginalis.

METHODS

There are currently no biomarkers available for the detection of autophagy in trichomonads. To clarify whether TvAtg8 is a potential autophagosome marker in T. vaginalis, the TvAtg8a coding sequence was cloned into an expression vector and the recombinant protein (rTvAtg8) was generated via a prokaryotic expression system. The recombinant TvAtg8 protein was purified by His-bound resin (Novagen) column chromatography. The polyclonal antibody was further purified by NHS Mag Sepharose (GE healthcare) using the His-tagged recombinant protein. Proteasome activity was determined by the Proteasome Activity Fluorometric Assay kit (Biovision) according to the manufacturer's instructions. Detection of autophagic vacuoles (AVs) and lysosomes by immunohistochemistry (IHC).

RESULTS

Here, we reported that T. vaginalis Atg8 (TvAtg8) was upregulated and conjugated to autophagosome-like vesicles upon autophagy induction by GR. Moreover, we investigated the role of autophagy in T. vaginalis upon proteasome inhibition (PI). PI-induced autophagy compensated for the removal of polyubiquitinated proteins under glucose-rich condition. GR-induced autophagy is a major proteolytic system in T. vaginalis.

CONCLUSIONS

These results suggested that autophagy was vital for proteolysis in T. vaginalis with an impaired ubiquitin-proteasome system or under glucose-limited environment. Our findings unveiled previously unidentified functions of autophagy in proteostasis in trichomonads, advancing our understanding of this highly conserved process in the ancient eukaryote.

ID: 15384 PIN: 74

RALSTONIA MANNITOLILYTICA INFECTION IN AN END STAGE RENAL PATIENT

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BACKGROUND-AIM

Ralstonia mannitolilytica is an emerging opportunistic pathogen. Hospital outbreaks of Ralstonia spp. are mainly associated with contaminated treatment water or auxiliary instruments.
Clinical isolation of R. mannitolilytica is rare in our hospital, while separation from the blood is even rarer.

METHODS

We retrospectively analyzed the clinical information of patient with R. mannitolilytica infection.

RESULTS

The patients' primary-onset symptoms were dysurea associated fever on and off for 5 days. Laboratory data shows, neutrophilia, elevated CRP and U/A was pyuria, as well as significant increases in certain inflammation indicators. The effect of treatment with Tapimycin was good.
The preliminary Gram-stain showed Gram-negative bacilli and the cultures grew Gram-negative organisms. The organism was identified as R. mannitolilytica by the Vitek 2. Disc diffusion (CLSI, 2015) was done for the various antibiotics. In our hospital, this was the first case of R. mannitolilytica infection as a significant pathogen in a case of true bacteremia.

CONCLUSIONS

Ralstonia mannitolilytica is a gram-negative, non-fermenting bacteria. Ralstonia mannitolilytica rarely causes clinical infections, but once it does, it can lead to more serious infections, such as sepsis, meningitis, and osteomyelitis. Outbreak of Ralstonia mannitolilytica infections in the hospital are typically associated with contaminated medical supplies or instruments.
Many of the cases of infection with Ralstonia spp. are due to
contaminated solutions, including water for injection, saline
solutions made with purified water, respiratory solutions and
sterile drug solutions. This contamination can occur through many different means, but one of the most important is due to the ability of Ralstonia spp. to pass through 0.2-∫m filters that are used for the sterilisation of many medicinal products, such as saline solution. These species have certain characteristics, such as resistance to disinfection practices and the ability to survive in water supplies, which allows them to cause many potentially harmful infections and death.

ID: 15387 PIN: 75

STATISTICS OF TESTING RESULTS BY MULTIPLE QUALITATIVE REAL-TIME PCR ON PATIENTS WITH DIARRHEA DURING THE TWO-YEAR PERIOD IN A MEDICAL CENTER IN NORTHERN TAIWAN

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BACKGROUND-AIM

Enteric diseases caused by microorganisms represent a significant portion of morbidity and mortality worldwide. Pathogens enter the body through the gastrointestinal tract and the routes of infections typically are spread via contaminated food, water, or contact with vomitus or feces. Each of the causative agents may result in slightly different clinical symptoms, but all cause diarrhea. This laboratory are routinely utilizing qualitative real-time PCR to detect several specific genes, such as ipaH gene for Shigella spp. or Enteroinvasive E. coli, stx 1a and stx 2a gene for Shiga-toxin producing E. coli, tuf gene for Campylobacter jejuni and C. coli, and SpaO gene for Salmonella spp., for clinical diagnosis of acute enteric infection. To see the prevalence of those enteric bacteria, the laboratory did statistics of testing results on patients with diarrhea during a two-year period.

METHODS

A total of 957 clinical stool samples were tested by BD MAX Enteric Bacterial Panel assay, some of which being cultured simultaneously (Biochemical tests and VITEK® MS, Biomerieux) during the period 2016 to 2017.

RESULTS

27(2.8%) were ipaH gene positive, among which the adult dominantly accounted for 96.3%; 5(0.5%) were stx gene positive; 48(5.0%) were tuf gene positive, among which the children, the adult, and the aged accounted for 25%, 60.4%, and 14.6% respectively; 74(7.7%) were SpaO gene positive, among which the children, the adult, and the aged accounted for 39.2%, 32.4%, and 28.4% respectively. From those gene-positive samples with stool culture, we found that Shigella sonnei, Shigella flexneri, Campylobacter jejuni and Salmonella group B. were the predominant species of target genera.

CONCLUSIONS

It showed the regional prevalent species causing diarrhea in northern Taiwan.

ID: 15401 PIN: 76

USING MODIFIED PRIMER TO DETECT ASPERGILLUS SPECIES

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BACKGROUND-AIM

Aspergillus species contain over 900 strains. In clinical, the most popular strains were Aspergillus fumigatus,Aspergillus flavus,Aspergillus niger,Aspergillus nidulans and Aspergillus terreus. In this study, we wanted to design a modified primer that can detect Aspergillus species from bronchoalveolar lavage fluid. Otherwise, by sequencing the PCR product , we also could analysis the strain.

METHODS

In this study, we used the bio-information tool to design a modified prime that target on 18sRNA of Aspergillus species. Then we collected 47 samples from patients who occurred Aspergillus infected by using galactomannan test.

RESULTS

The result showed by using the modified prime can detect the Aspergillus species from BAL. All of the samples were PCR positive, then by sequencing, we found these Aspergillus were Aspergillus fumigatus (44 stains) and Aspergillus flavus(3 strains).

CONCLUSIONS

According to our study, we found the modified primer can use in our laboratory. Otherwise, by using the sequencing, we could analysis difference stain of Aspergillus species. Finally, by using this primer, we will collect more samples and analyze difference Aspergillus species then discuss the risk factors of patients.

ID: 15397 PIN: 77

EXPLORING SEXUAL-SENSORY SYSTEM EVOLUTION OF ENTEROCOCCUS FAECALIS USING SYNTHETIC AND SYSTEMS BIOLOGY APPROACHES

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BACKGROUND-AIM

Enterococci are long-standing members of the human microbiome and they are also widely distributed in nature. However, with the surge of antibiotic-resistance in recent decades, some enterococcal species have emerged to become significant nosocomial pathogens, acquiring extensive antibiotic resistance. Enterococcus faecalis is a Gram-positive commensal member of the gut microbiota that are highly antibiotic-resistant nosocomial pathogens. It use the mechanism of conjugation to spread antibiotic resistance between resistance-bearing donor cells and resistance-deficient recipient cells. Thus, we aimed to determine the optimum donor-recipient ratio of E. faecalis for plasmid transfer to occur which can be a prospective tool as therapeutics against antibiotic resistance.

METHODS

We established a system for the quantification of plasmid-conjugation based on fluorescent markers and antibiotic resistance. The Green fluorescent protein (GFP) response is the indicator of plasmid transfer from the donor to the recipient. After having the E. faecalis strain with plasmid (Donor) and without plasmid (recipient). We let the culture of the two strains to grow overnight. Afterwards, we get an aliquot of the two cultures and let it grow until it reaches an optical density of 0.6. Next, a dose-response experiment was conducted with various proportions of donor-recipient ratio (1:10, 1:20, 1:30, 1:40, 1:50, 1:60, 1:70, 1:80, 1:90, and 1:99). We read the samples in the flow cytometer after 1 hour and 2 hours of incubation. The experiment is repeated four times. The statistical values gathered from the flow cytometry data where ran in R software.

RESULTS

Bacterial aggregates can be observed visually after 1 hour of incubation. In the flow cytometer, GFP response starts to manifest with a donor-recipient ratio of 0.5. This GFP response starts to increase further up to a donor-recipient ratio of 0.9.

CONCLUSIONS

Through this study, we were able to determine that the plasmid transfer in E. faecalis starts with a donor-recipient ratio of 0.5. We also determined that the optimum donor-recipient ratio is 0.9 which has the highest GFP response. This ratio can be used for prospective antibiotic therapy wherein there is 10% donor cell (which can harbor the therapeutic strategy) and 90% of recipient cell.

ID: 15399 PIN: 78

USING ENRICHMENT BROTH TO CULTURE CLOSTRIDIUM DIFFICILE FROM ENVIRONMENT WITHOUT ANAEROBIC SITUATION

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BACKGROUND-AIM

Clostridium difficile is the most important pathogen of the antibiotic association diarrhea. In USA CDC guideline, there are five method to reduce C.difficle infect in hospital. These comment were following: Improve prescribing of antibiotics, use best test for accurate result to prevent spread, rapidly identify and isolate patients with C.difficile, wear gloves and gowns when treating patient with C.difficile and clean room surface by using spore-killing disinfection. In this study, we created a new broth that can culture C.difficile from environment without anaerobic situation. And by using this broth, we can check if the surface disinfection were correct or not.

METHODS

In this study, we created a new enrichment broth that can culture C.difficile from environment without anaerobic situation. Then we collected 72 samples from patient's surroundings (36 samples were before cleaning, and another 36 samples were after cleaning). All patients occurred C.difficile infection. Once the enrichment broth's color from pink to yellow, we sub-cultured to CCFA agar. After 24~48 hours, the colony presented on the surface of agar, we used the maldi-tof to check the colony were C.difficile or not.

RESULTS

In this study, we found once enrichment broth turn to yellow, the CCFA were culture positive for C.difficile by maldi-tof identified.All the 36 samples that collected before cleaning were culture positive, and another 36 sample that collected after cleaning were 13.8%(5/36) culture positive.

CONCLUSIONS

According to our study, we found this enrichment broth can culture Clostridium difficile from environment without anaerobic situation. That's to say, we can use this broth to check if the surface were disinfection or not.

ID: 15045 PIN: 79

IS SELF-QUANTIFYING A CONCERN OF HEALTH CARE?

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BACKGROUND-AIM

New opportunities for us to be quantified are developed every day, both as eHealth apps and wearables, such as Fitness-wristbands. Everybody has the opportunity to measure and log the data of our body. Self-quantifying is mostly used for fitness purposes, however some users might seek care due to data gained from wearables and eHealth apps. Self-quantifying is also used clinically within the healthcare as diagnostic and treatment tools. With this, there will be some ethical issues of self-quantifying for the health care to consider. Moreover, as quality assurance is an important part of the ethics of biomedical laboratory science, quite likely there is need for the involvement of biomedical laboratory scientists.
Aim: To formulate ethical dilemmas and contribute to an ethical discussion concerning self-quantifying.

METHODS

A working group within the Swedish National Council on Medical Ethics made literature studies and scanned the internet for information. Meetings with representatives of Swedish authorities and scientists were held. Focus group of teenagers was formed for insights from the generation born into being online.

RESULTS

The mapping and studies produced many questions from an ethical point of view, in regard of integrity, autonomy, equality and priorities. The ethical issues and conclusions might be different depending on if it is a healthy individual or an individual with an illness performing the quantifying.
Systems where individuals with already produced data automatically have priority if seeking health care, will create ethical dilemmas in perspective of equality and priority.
When used in healthcare there will be ethical consequences if there is no guarantee of integrity. In addition, who is responsible for the quality assurance? Biomedical laboratory scientists can gain an important role in this matter.
To assure the patient's autonomy, when self-quantifying is recommended, communication is crucial. Can biomedical laboratory scientists play a part also in this field?

CONCLUSIONS

Awareness is necessary from ethical, integrity and quality perspectives in regard of wearables and eHealth apps. Healthcare, including biomedical laboratory scientists, need to be involved as this may have effect on prioritizing, diagnostics and treatment.

ID: 14969 PIN: 8

DETECTION ALGORITHM OF INADEQUATE BLOOD SPECIMENS DUE TO CONTAMINATION WITH DRIP INFUSION SOLUTION AT THE CLINICAL CHEMISTRY TESTS

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BACKGROUND-AIM

Panic value due to inadequate blood specimen is often reported in hospital, and one of the causes is contamination with drip infusion solution into the blood. It is shown that contamination with drip infusion solution is caused by wrong blood drawing technique or position. Therefore, drawing blood guidelines are determined in Japan by JCCLS. In the case of panic value occurred by wrong blood drawing, it is possible to detect and confirm with QC method. However, it is difficult to detect contamination with wit drip infusion solution not to reach the panic value, and it seems that many unnoticed incidents are occurring in hospital. The aim of this work is to clarify influence of contamination with drip infusion at the clinical chemistry tests, and to design the algorithm for detection of inadequate blood specimen that is contaminated with drip infusion solution.

METHODS

The subject of this study is healthy adult person. We used five types of drips with different contents of electrolytes and glucose. The drip solution was injected into brachial vein with infusion pump. The flow speed was varied from 0 ml/h to 150 ml/h. Blood was drawn from up/down stream site of vein and opposite side vein on forearm. Biochemical tests were analyzed by Fuji dry-chemistry analyzer. We analyzed relevance between infusion speed and the biochemical value.

RESULTS

The change of value was not shown at the upstream site and opposite side. K+ or GLU showed greatly increase (over +200%:75ml/h) at the downstream site, and it showed panic value. Meanwhile, TP, ALB, and BUN showed greatly decrease in proportion to flow speed (-20%:75m/h, -60%:150m/h) at the downstream site. Other biochemical tests showed slight decrease (within -20%), and each biochemical value was approximate value of the lower limit level of analysis.

CONCLUSIONS

It is assumed that increase of K+/ GLU or decrease of TP/ ALB/ BUN is index of contamination of drip infusion solution. Even if each biochemical value does not to reach the panic value, we should doubt contamination with drip solution when TP/ ALB/ BUN showed decrease. And it seems that we need confirm reduction of red blood cell related value for prevention of medical incidents.
ACKNOWLEDGMENT: This work was supported by SCOPE of the Japan Ministry of Internal Affairs and Communications.

ID: 15307 PIN: 80

CODE OF ETHICS: 1ST DEFENCE IN FITNESS TO PRACTICE

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BACKGROUND-AIM

Biomedical Scientists are regulated professionals with defined qualifications to practice.
The function of a regulator is to protect the public. In doing so the regulator will define standards such as qualifications for practice and lay down a code of professional conduct.

METHODS

Codes typically define expected conduct, performance and ethics. Codes are explicit and are written in terms of 'you must', you must not and 'you should'.
Breaches of the code may be classified as professional misconduct or poor professional performance and may lead to disciplinary sanction following fitness to practice inquiry.
The IFBLS Code of Ethics was originally adopted in Dublin in 1992 and revised in Nairobi in 2010. It is a principles based document. Compliance with the IFBLS code will, for the most part, keep the biomedical scientist safe from inquiry.

RESULTS

There are, however, some areas in which the IFBLS code is silent. It does not address areas such as a duty of candour or responsibility to raise concerns about safety and quality of care. It does not consider the topic of patient consent for analysis or to participate in research studies nor the safe use of social media.
CORU is the Irish Health and Social Care Professions Regulator. It regulates 15 professions in Ireland and has a generic Code of Professional Conduct and Ethics which is customised for each profession. It is clear that registrants must act within their knowledge, skills and competence. Participation in CPD, as laid down by the Registration Board is a requirement.
This presentation will consider how compliance with the Code provides a Registrant with a defence against a complaint of professional misconduct or poor professional performance.

CONCLUSIONS

The CORU Code for Medical Scientists is in agreement with the IFBLS code while it provides additional detail and clarity assisting the registrant in compliance with the Code.

ID: 14800 PIN: 81

ACTIVITY OF THE IHE-J (INTEGRATING THE HEALTHCARE ENTERPRISE-JAPAN) PALM(PATHOLOGY AND LABORATORY MEDICINE)DOMAIN

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BACKGROUND-AIM

IHE (Integrating the Healthcare Enterprise) is an initiative by healthcare professionals and industry to improve the use of computer systems in healthcare share information. The IHE activities of user and vendor groups are to improve interoperability in healthcare share information.
IHE was established in the United States in 1999. The Pathology and Laboratory Medicine (PaLM) domain of IHE becomes active as of January 2016. This domain merges and supersedes the two prior domains Laboratory (LAB) and Anatomic Pathology (AP) respectively launched in 2003 and 2006.
We report the activities of the IHE-J PaLM domain.

METHODS

IHE-J PaLM is presently involved in three major activities ”Public relations” , ”Publication of the Technical Framework”, and ”Holding Connectathons”. Public relations: is to promote the importance of IHE, such as holding workshops, announcements in related congresses, and submissions of original papers.

RESULTS

Public relations: To understand the importance of IHE, we perform many activities. For instance: holding workshops, announcements in related congresses, and original paper submission, etc.
Publication of the Technical Framework: Technical Framework is a detailed, rigorously organized document which provides comprehensive guidelines to implementing defined integration capabilities. We have already published 7 integration profiles (Final text): LTW, LDA, LPOCT, LCSD, LBL, LAW, and XD-LAB.
Holding a Connectathon: “Connectathon 2017 in Japan” was held in Tokyo during 24th-29th September, 2017. Interconnection tests of LTW, LTW-MB,LAW,LDA, LPOCT, and the LBL profile were performed in the IHE-J PaLM. The number of participating vendors in the IHE-J field were 13companies.

CONCLUSIONS

Fifteen years have passed since the IHE-J was established, and the activities have expanded.
In Japan, more than ten hospitals have been established by the IHE supported hospitals.
IHE supported hospitals have been established about ten hospitals in Japan. IHE aims to promote easy and accurate exchange of medical information data all over the world. IHE activities are continuing with a positive outlook. We are sure that the participant in this congress will be interested in the IHE and we would like you to participate in the IHE in your country.

ID: 15050 PIN: 82

DIGITALIZATION OF BLOOD TRANSFUSION MANAGEMENT SIGNIFICANTLY IMPROVES PATIENTS' SAFETY

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BACKGROUND-AIM

Blood transfusion is considered a high-risk procedure for patients because the process requires optimal coordination from many parties, including physicians, nurses, medical technologists, and blood transporting personnel. It is therefore crucial to establish a management system that executes accurately and efficiently from doctor's order to patient's testing and blood transfusion. The goal of this study is to utilize informatics to help verify each step along the entire procedure and replace the currently laborious and error-prone manual process, leading to an improvement in the accuracy and patients' safety.

METHODS

The information system was constructed mainly based on the commonly found errors and healthcare colleagues' needs. The parameters also include treatment reason, reference values for test results, transfusion speed choice, blood type identification, blood bank record and verification, and treatment reports.

RESULTS

Following the digitalization and bar coding of the blood transfusion procedure, the accuracy of the transfusion indications reached to 99.5%, patients' blood type verification error rate was at 0%, and the blood transfusion error rate was at 0%. This system replaced the manual process and significantly reduced the paper work and workload for nurses and medical technologists.

CONCLUSIONS

The use of informatics and the bar coding system to execute doctor's order, biopsy collection and test, and blood transfusion verification and procedure significantly reduces the mistakes that can cause irreversible damages to patients. It therefore increases the treatment accuracy and patient safety during the blood transfusion procedure.

ID: 15257 PIN: 83

APPLYING THE EXCEL FUNCTION TO THE CALCULATION OF PATERNITY INDEX IN CONVENTIONAL PARENTAGE TESTING.

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BACKGROUND-AIM

As genetic markers, short tandem repeats (STRs) are applied to DNA parentage testing and the allelic genotyping is determined by software after capillary electrophoresis. Most routine cases we deal with are duo and trio parentage testings. In the past, at our lab, we manually listed the formulas and typed the allelic frequency in the Excel to get the result when calculating the paternity index (PI). Because the process of getting PI is a little ineffective and time-consuming, we try to use Excel functions to make easy of it.

METHODS

The main Excel functions we use are “IF” and “VLOOKUP”:
1. Use “VLOOKUP” function
30 STR loci from the Identifiler system and the GenePhile G-Plex STR system are all constructed on the new worksheet of the Excel (“Table a” and “Table b” respectively).For loci D8S1179, the alleles 6 to 18 are put in cell A2 to A14, and the allelic frequency is put in cell B2 to B14. Taking the formula of duo parentage testing as an example, assuming that alleles of the alleged father and the child are (P,Q) and(R,S),and P,Q,R,S are put in cell B1, D1, E1, and G1 respectively.When the alleles of the duo are homozygote, the formula is 1/p, and the rule can be “B1=D1,D1=E1,E1=G1”. When we type the formula in cell I1: = VLOOKUP (B2,Table a! A2:B14,2, FALSE), and cell J1: = VLOOKUP (D2, Table a! A2: B14, 2, FALSE), p in cell I1 and q in cell J1 can be displayed automatically.
2. Use “IF” function
We list all the specific conditions for the PI formula of duo parentage testing in IF function, and PI can be shown automatically when typing the formula into cell HI : =IF(AND(B1=D1,D1=E1,E1=G1),1/I1,IF(AND(B1=D1,D1=E1,G1>E1),1/(2*I1),IF(AND(B1=D1,D1=G1,G1>E1),1/(2*I1),IF(AND(D1=E1,E1=G1,D1>B1),1/(2*J1),IF(AND(B1=E1,E1=G1,D1>B1),1/(2*I1),IF(AND(B1=E1,D1>B1,G1>E1,D1<>G1),1/(4*I1),IF(AND(D1=E1,D1>B1,G1>E1,B1<>G1),1/(4*J1),IF(AND(B1=G1,D1>B1,G1>E1,D1<>E1),1/(4*I1),IF(AND(D1=G1,D1>B1,G1>E1,B1<>E1),1/(4*J1),IF(AND(B1=E1,D1=G1,D1>B1),(I1+J1)/(4*I1*J1),0.001))))))))). We regard it mutation when all the conditions are not matched, and the PI is 0.001.

RESULTS

Using SPSS to compare the time taken between the manual calculation and the newly constructed method by independent t-test, $p<0.05$.

CONCLUSIONS

Making good use of Excel functions in the calculation of PI can increase the work efficiency due to time-saving.

ID: 14789 PIN: 84

FINNISH CYTOTECHNOLOGISTS' VIEWS ON THE COMPETENCIES OF NEWLY GRADUATED BIOMEDICAL SCIENTISTS IN CLINICAL CYTOLOGY

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BACKGROUND-AIM

Education of cytotechnologists varies across the world and their work has undergone a number of changes over the last few years. Finnish curriculum of Biomedical Laboratory Science Programme includes clinical cytology studies. The purpose of this study was to establish the competences of newly graduated biomedical scientists in clinical cytology from the cytotechgnologists' point of view. The goal is to use these findings to help develop the curriculum in biomedical laboratory science programmes in Finland.

METHODS

The data was collected by the questionnaire, which mainly consisted of statements that were scored on a five-point Likert-scale, where one was not important and five was very important. It covered five sections of clinical cytology: sampling and techniques, gynaecological screening, non-gynaecological screening, safety and quality management and miscellaneous.
The questionnaires were given to all (N=40) cytotechnologists during the national conference of the Finnish Association of Cytotechnologists in November 2015. The means were calculated using Excel 2016 (Microsoft Corp, Washington, USA).

RESULTS

Of the 40 delegates approached to complete the questionnaire, 37 (92.5%) agreed.
Respondents felt that important sampling and technique competencies were specimen fixation, with a mean score of 4.9 out of 5.0, types of specimens (4.7), pap smear collection (4.7), pap smear request information (4.7) and evaluation of specimen sufficiency (4.6). Less important competencies were examining fine needle aspirations (2.0) and nasopharyngeal specimens (2.2). The respondents had lots of expectations about how education in cytology could be developed, for example more theoretical lessons, more practice in microscope use and consistent criteria for training and cooperation between cytology laboratories and universities of applied sciences.

CONCLUSIONS

The cytotechnologists who took part in our survey expected newly graduated biomedical scientists to have basic competencies in cytology. These were sampling and techniques, laboratory safety and quality management, specimen adequacy and identifying normal cells taken during gynaecological screening. They were also keen to develop education in cytology.

ID: 14900 PIN: 85

KI67/P16 IMMUNOCYTOCHEMICAL DUAL-STAINING FOR VERIFICATION OF HSIL

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BACKGROUND-AIM

Differential diagnoses are common when screening for cervical cancer. Issues can be atrophy, atypical tissue repair and reactive cells, which can be misinterpreted as HSIL (high grade squamous intraepithelial lesion). The consequences for the patients though, are very different. The patients showing normal cells, will continue participating in the regional screening program, while the ones diagnosed with HSIL will be referred to a gynecologist for colposcopy. Former studies has shown that Ki67/p16 immunocytochemical dual-staining has a high sensitivity for detecting HSIL. The aim of this study was to investigate Ki67/p16 as an indicator for HSIL.

METHODS

50 BD Surepath™ liquid based cytology from the cervix were tested. These patients were all diagnosed with HSIL (confirmed with CIN2 or CIN3 in biopsies). The samples were collected consecutively in a period of one month at University Hospital Zealand, Department of Pathology in Naestved 2017. The samples were stained for Ki67/p16 using chromogens Deep space Black (Ki67) and Red Warp (p16) on Agilent/Dako Omnis ®.
The criteria for a dual-stained Ki67/p16 positive result, was to observe a single cell or small group of 2-3 cells with distinctive black Ki67 nuclear reaction and strong reddish cytoplasmic reaction of p16 in the same cell. If just one single cell was positive in a slide, it was interpreted as positive.

RESULTS

48 slides was tested positive for Ki67/P16, 1 failed technically and 1 was positive however inconclusive, because there were no positive single cells in this slide, only positive groups. If only positive groups appear, in can be difficult to interpret whether it is a positive dual-staining.
Triage could be performed on the inconclusive specimen by testing for high risk HPV (High risk papillomavirus). If positive, it favors true positive Ki67/p16. If negative still inconclusive.
To test the sensitivity of the dual-staining for false positive results, a follow up study could be interesting, by testing a group of women with atrophy and/or reactive changes, expected to be negative.

CONCLUSIONS

Ki67/P16 immunocytochemical dual-staining, provides a high sensitivity in detecting HSIL on the tested material. It could be useful as a supplementary triage method in differential diagnosis to HSIL.

ID: 14965 PIN: 86

FINE NEEDLE ASPIRATION CYTOLOGY OF PARATHYROID LESIONS; A POTENTIAL SOURCE OF DIAGNOSTIC PITFALLS DISTINGUISHING THYROID LESIONS

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BACKGROUND-AIM

Fine needle aspiration cytology (FNAC) is a useful tool in preoperative diagnosis. However, it is difficult to make a correct diagnosis of parathyroid lesions (PLs) in FNAC because of misdiagnosed as a thyroid lesion due to their location and similarities in cytological features. The aim of this study is to elucidate the cytological features of PLs and to find diagnostic pitfalls to differentiate them with cytologically mimicking lesions .

METHODS

FNAC of forty-three cases of parathyroid lesions which were histologically diagnosed as 32 parathyroid adenoma, 3 parathyroid hyperplasia, 1 atypical parathyroid adenoma and 7 parathyroid carcinoma were reviewed and compared with their cytological diagnoses at the Korea Cancer Center Hospital from January 2007 to December 2017. We evaluated the cytological details according to histological groups.

RESULTS

Forty-three cases in 42 patients (mean age 47.9 years, 32 women and 11 men) who underwent parathyroidectomy were reviewed. Cytological diagnoses of the forty-three cases were 29 parathyroid neoplasms (67%), 5 atypical cells (12%), 3 nodular hyperplasia of thyroid (7%), 5 Benign (non-specific) (11.6%), and one metastatic carcinoma (2.3%). From our retrospective analysis, the presence of follicular structures, macrophages, colloid-like material or bare nuclei in smears led to the misinterpretation as thyroid lesions or lymph node lesions.

CONCLUSIONS

Although it is not always easy to diagnose correctly in the clinically ambiguous anterior cervical lesions including thyroid, parathyroid, lymph node, etc on FNAC, it is very important to keep in mind to include parathyroid lesions as a differential diagnosis in some clinical settings, and the smears should be carefully examined to find the supporting features of parathyroid lesions.

ID: 15069 PIN: 87

STUDY OF THE CYTOLOGICAL COMPOSITION OF PALATINE TONSILS CRYPT CONTENT FOR DETERMINATION OF THEIR FUNCTIONAL STATE IN PATIENTS WITH CHRONIC TONSILLITIS

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BACKGROUND-AIM

The goal of the research was to study cellular composition of palatine tonsils' crypt content. This study allows to clarify the form of chronic tonsillitis, to evaluate preservation and reserve capacities of the tonsils lymphoid tissue. Microscopic examination gives preliminary information on the amount and composition of microflora, in some cases it can be the only way to detect protozoa. Repeated cytological examinations give an opportunity to observe changes in the cellular composition of tonsils crypt content during the course of treatment and make a conclusion concerning the effectiveness of certain medicaments, as well as to assess the reserve capabilities of the tonsils lymphoid tissue in a particular patient.

METHODS

We've chosen a technically simple, accessible and not disturbing method for patients in selecting material for the study. The cytological conclusion concerning functional state of the tissue of palatine tonsils was given based on the ratio of cellular elements, primarily the proportion of lymphoid elements in the preparation of crypt contents, as well as the amount and variety of microflora.

RESULTS

The following cytological groups were identified.
1. Good functional ability of lymphoid tissue of palatine tonsils.
2. High activity of lymphoid tissue of palatine tonsils.
3. Compensated functional capacity of palatine tonsils.
4. Decompensation of palatine tonsils functions.

The study gave possibility to detect different degrees of oppression of the tonsils lymphoid tissue functions in the patients with the same clinical diagnosis. It helped physician to clarify the form of chronic tonsillitis and determine the treatment tactics.

CONCLUSIONS

The cytological study of the palatine tonsils crypt content can serve as an additional method for assessing the functional state of the tonsils, the reserve capacity of the lymphoid tissue, clarifying the diagnosis of chronic tonsillitis, determining its form and the effectiveness of treatment.

ID: 15101 PIN: 88

AUTOPHAGY TRIGGERED DEGRADATION OF ATG4B PROTEIN IN HUMAN GLIOMA CELLS

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BACKGROUND-AIM

Autophagy is a lysosomal degradation pathway that is crucial for survival, differentiation, development, and homeostasis. Dysregulation of autophagy leads to the various diseases including infection, cancer, neurodegeneration, aging and heart disease. In mammalian cells, at least 38 autophagy genes (ATGs) are primarily involved in the autophagy machinery in cells from phagophore imitation to autophagosome formation. ATG4 is a cysteine protease required for autophagy and include 4 members: ATG4A, ATG4B, ATG4C and ATG4D. ATG4B is the major ATG4 protease autophagy in mammalian cells. However, the effects of autophagy on ATG4B expression remain unclear.

METHODS

Human glioma cell line H4 maintained in DMEM containing 10% FBS was used for investigation. Cells were treated with autophagy inducer rapamycin or EBSS, then further harvested for protein degradation by immunoblotting using antibodies against ATG4B, p62, LC3-I, LC3-II level. Knockdown of ATG genes with siRNA were used to determine if ATG genes are involved in autophagy induced-diminished ATG4B protein level.

RESULTS

Our data indicated that ATG4B protein level was decreased in cells under starvation or rapamycin treatment. However, Knockdown of ATG genes (ATG5,ATG7) results in recovered effects on autophagy-induced degradation of ATG4B.

CONCLUSIONS

Autophagy may negatively regulate ATG4B protein level to diminish autophagy in human glioma cells, likely through autophagy-mediated degradation.

ID: 15349 PIN: 89

THE ROLE OF RENAL TUBULAR EPITHELIAL CELLS IN URINE WITH CHRONIC KIDNEY DISEASE

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BACKGROUND-AIM

Diabetes is one of the most popular chronic diseases that may cause diabetic nephropathy (DN). Diabetic nephropathy is the commonest cause of end-stage renal disease (ESRD). When the GFR is less than 15%, it is called end-stage renal disease (ESRD), patient might go to dialysis. Dialysis rate in Taiwan had been the top in the world. Screen tests for DN include serum creatinine, urine protein, urine occult blood, urine microalbumin etc. Urinalysis is a classic, safe and reliable test and its data could reflect renal function. Unfortunately, urine chemistry may be interfered by different kind of situation. However,renal tubular epithelial cells are a group epithelial cell that can detect injured kidney.

METHODS

We screened the renal tubular epithelial cells in urinalysis test by using instrument of urine sediment (iQ200)and staining sediments by Sternheimer-Malbin stain. We evaluated the relationship of renal tubular epithelial cells and urine protein or urine sugar.

RESULTS

According to our observation, renal tubular epithelial cells presented in urine sediments would combine some casts in it. However, urine protein and urine sugar might not be positive in the present of renal tubular epithelial cells. We advanced analysis the connection of number of renal tubular epithelial cells and eGFR.

CONCLUSIONS

Renal tubular epithelial cells are not easy to identified though it's importance to diagnosis for acute renal injury. Recently, we highlighted the renal tubular epithelial cells in urine sediment and analyzed the relationship of chronic kidney disease. However, renal tubular epithelial cells have various types and one of parts are not easy to differentiate from urothelial cells. It needs more practice and experience to identified renal tubular epithelial cells correctly.

ID: 14976 PIN: 9

USING LITHIUM HEPARIN TUBE FOR VENOUS GAS ANALYSIS: A SUITABLE REPLACEMENT FOR BLOOD GAS SYRINGE?

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BACKGROUND-AIM

Analysis of arterial blood gas is essential for the diagnosis of respiratory or metabolic acidosis/ alkalosis. But nowadays vein gas samples are more commonly adopted in the clinical analysis. Besides, patients' venous blood are also collected with lithium heparin tube (LHT) in the meanwhile for the emergency biochemical examination. At our phlebotomy counter, medical technicians have to phlebotomy patients from emergency room and out-patient clinic. In order to simplify the sample collecting procedure, our hospital is investing to replace the blood gas syringe (BGS) by LHT and analyzing the results with data.

METHODS

Venous blood samples of 17 volunteers was collected. For each of volunteers, 2.5 mL to a BGS (A), 3 mL to two LHTs (B and C), 1.5 mL to two LHTs (D and E) respectively. In which A is the control group whereas B, C, D, E are the experiment groups. All specimens are bathed with iced water and ready to be analyzed within 30 minutes. Both Group B and D samples were drawn by syringe with needle from capped LHTs. Both Group C and E samples were drawn by syringe without needle from uncapped LHTs. Different sample amounts (3 mL and 1.5 mL) are compared to determine whether the vaccum pressure within LHTs affects the results; capped and uncapped LHTs are compared to determine whether the results change after exposure to the atmosphere. To avoid interferences by anti-coagulant coated inside the LHTs, minimum sample of 1.5 mL is required. Venous samples were then analyzed by blood gas analyzer (RL1256) and results were compared by Wilcoxon matched-pairs signed-rank test.

RESULTS

Compared 1.5 mL LHT (D and E) with BGS, there is no significant differences (P value>0.05) in the following items including pH, HCO3-act, pCO2, HCO3-std, PO2, BE(B), BE(ecf), ctCO2, Hct, tHb, sO2, FO2Hb, FMetHb, FHHb and ctO2, 15 items in total. Indicating that BGS could be replaced by LHT in the above 15 items. However, compared 3 mL LHT (B and C) with BGS, only FMetHb showed no significant differences. From the above results, we can see that 1.5 mL LHT is more recommended to be used for replacing BGS instead of 3 mL LHT.

CONCLUSIONS

In this study, we proved that 1.5 mL LHT sample can be used to replace the traditional BGS for VBG test. By replacing BGS with 1.5 mL LHT, not only reducing patients' discomfort and exposure of incident of medical technicians during blood collection but also keeping the precise test results to assist clinical judgments.

ID: 15369 PIN: 90

EVALUATION OF BODY FLUID CELL COUNT USING A SYSMEX XN-350 AUTOMATED HEMATOLOGY ANALYZER

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BACKGROUND-AIM

Cell counts of body fluids are usually performed by a microscopic examination using a hemocytometer. The process of manual cell counting using hemocytometer is complicated and the coefficient of variation is 10~20% because of small number of cells from small amount of body fluids.
Now several studies about the comparision of body fluids analysis between automatic hematology analyzers and conventional microscopic examination. Automated hematology analyzers are simple to perform, and also show better than manual method due to measuring more many cells.
We evaluated the Sysmex XN-350 with a body fluid test mode, and compared with manual body fluid cell count.

METHODS

The protocol for sample analysis was performed according to the CLSI guideline.
We assessed the accuracy, precision, correlation, linearity, carryover, and sensitivity (LoB, LoD, LoQ) for the Sysmex XN-350 from September to November 2017.These comprised 128 samples, including 43 cerebrospinal fluids (CSFs) and 85 non-CSFs (ascitic, pleural, and other fluids). Neubauer hemocytometer was used to count the number of total nucleated cells (TNC) and RBC.The body fluid mode on the Sysmex XN-350 analyzed total nucleated cells (TNC) and RBCs. Both analyzing samples by the automatic analyzer and conventional microscopic examination performed at the same time.

RESULTS

The Sysmex XN-350 demonstrated good analytical performance.
Carryover and sensitivity test were acceptable. The coefficient of variation of precision for counting TNC and RBC was less than 3%. The LoB was 0/uL for all parameters in all types of body fluids. The LoD for TNC count was 1/uL and the LoD for RBC count was 1000/uL. The LoQ for TNC count was 5/uL and the LoQ for RBC count was 2000/uL.The linearity was R=1.000 for TNC and R=0.999 for RBC for all parameters in all types of body fluids.There was good correlation between the two methods.These evaluations between the automated analyzer and microscopic examination were R=0.987 for TNC and R=1.000 for RBC in CSFs, and R=0.976 for TNC and R=0.995 for RBC in non-CSFs.

CONCLUSIONS

The data presented in this study demonstrates that the body fluid mode on the Sysmex XN-350 is reliable for the cell count anlaysis of body fluids. The Sysmex XN-350 was available alternative to microscopic examination for body fluids cell analysis.

ID: 15409 PIN: 91

CAN WE FIND THE DIAGNOSIS OF CRYPTOCOCCAL MENINGITIS UNDER THE MICROSCOPE? – THREE CASES

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BACKGROUND-AIM

Cryptococcal meningitis is a common opportunistic infection and AIDS-defining illness in patients with late-stage HIV infection, but also occurs in patients with other forms of immunosupression and in apparently immunocompetent individuals. Cryptococcus neoformans can infect any organ in the body, but has a predilection for the lung and the CNS. Meningitis is the most frequent manifestation of cryptococcosis, and mortality remains high, even in developed countries.
The CSF white cell count (WCC) is raised, with a predominance of lymphocytes, in non-HIV-associated infection. In HIV-associated cryptococcal meningitis the CSF white cell count is lower and may even be normal (patients with AIDS are unable to mount an adequate inflammatory response). A cytological examination frequently shows the presence of a yeast upon direct examination in a cell counting chamber, in India ink preparations or on stained slides after cytocentrifugation.

METHODS

Cerebrospinal fluid samples from 3 HIV seropositive patients attended at the University Hospital for Infectious Diseases (Zagreb, Croatia) were analyzed. All these patients were submitted to lumbar puncture (LP) based on their clinical complaint suggesting CNS involvement. All the samples underwent a standard laboratory screening which included manual and differential cell counts (using a Fuchs-Rosenthal chamber and cytocentrifuged in Cytospin 4, air-dried cytological smears stained by the May-Grunwald-Giemsa method, analyzed under microscope).

RESULTS

A 79-year-old HIV+ man: in 1st LP CSF white cell count (WCC) are 2/µL, yeast cells 560/µL; 2nd LP CSF WCC are 4/µL, yeast 288/µL. A 49-year-old HIV+ man: in 1st LP CSF WCC are 10/µL, yeast 3/µL; control LP was not performed. A 47-year-old HIV+ woman: in 1st LP CSF WCC are 4/µL, yeast 473/µL; 2nd LP CSF WCC are 2/µL, yeast 53/µL.

CONCLUSIONS

In patients with cryptococcal meningitis, cytologic examination of the CSF is very difficult as the yeast cells can be easily overlooked, particularly when few in number, and can be confused with erythrocytes or artifacts. Moreover, cryptococci sometimes show unusual cytomorphology that can cause diagnostic difficulty. Therefore, well trained and experienced technologists must be available to recognize these unusual organisms.

ID: 14897 PIN: 92

DIGITAL SYSTEMS AND GLOBAL TECHNOLOGY AS COMPLIMENTING DRIVERS OF CONTINUOUS PROFESSIONAL DEVELOPMENT (CPD) PROGRAMS FOR MEDICAL PROFESSIONALS IN ZIMBABWE.

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BACKGROUND-AIM

Continuous Professional Development (CPD) programs ensures optimal patient care and a comprehensive public health response. Digital systems are platforms that use internet and mobile applications to enhance reading, communication and researching. Global technology is a worldwide movement towards application of practical scientific knowledge to solve problems. However, resource-poor countries have been lagging behind in components of digital systems for CPD programs. Challenges to attend CPD programs includes location, registration fees and time availability. The Zimbabwe CPD program situation has not been formally studied but registration turnout during CPD programs suggests challenges with attendance may be common.

METHODS

A prospective cross sectional study was carried out on an online using Survey Monkey. Laboratory professionals and students were invited to participate.

RESULTS

Of the 61 respondents to the survey, 26.7% were female and 73.3% were male. Geographic distribution of the respondents, 53% are in Harare, 47% are outside Harare. Age range of the respondents was 18 to 54years. Of the 61 respondents were 34.4% Senior Laboratory Personnel, 26.2% Managers, 21.3% General Laboratory Personnel, 9.8% Students/interns, 6.6% Directors and 1.7% others. The most highlighted challenge was lack of frequent training to support CPD programs. The most outlined solution was innovation supported by other factors. Video conferencing and workshops to strengthen CPD was highlighted by 70%. Of the respondents, 89% outlined the importance of a workspace to gather creative to bring sustainable solutions to faced challenges. 98% respondents showed an interest to accessing technology and digital tools.

CONCLUSIONS

The use of technology including webinars, live conferencing, short courses and work-based learning projects is necessary to effect rapid and measurable CPD improvement. This will bring new ideas and fruitful contributions to our thriving profession. This will ensure good laboratory practice through the development of knowledge, skills, attitudes and behavior. This online platform gathers passionate laboratory professionals to discuss, share and spread ideas that drives research and innovation in Medical Laboratory Sciences.

ID: 15032 PIN: 93

TWO DECADES OF CPD FOR MEDICAL LABORATORY SCIENTISTS IN NIGERIA (1996-2017)

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BACKGROUND-AIM

There has been an exponential growth of knowledge and information in the recent past.As medicine keeps evolving,medical laboratory science too is caught up in rapidly changing biomedical technologies.This avalanche of knowledge and information are issues that professional Medical Laboratory Scientists (MLS) have to face on a daily basis.It therefore becomes imperative that to remain relevant, they have to embrace lifelong learning as of necessity. Continuing Professional Development (CPD) aims to improve knowledge, know -how and professional skills of individual MLS.Prior to 1996 there was no provision for MLS to continually upgrade their knowledge and skills. However in that year the Federal Ministry of Health made acquisition of CPD credits compulsory for annual licensure for all health professionals in Nigeria.
The aim of this study is to appraise the growth and development of compulsory use of CPD credit as a prerequisite for annual licensure in Nigeria and to see how the development of a well structured policy and governance has impacted on the professional service of MLS in the country.

METHODS

The method involved retrospective study of documents and data in AMLSN and MLSCN from 1996 to 2017 and personal interviews of MLS and key staff of the CPD dept. of MLSCN.

RESULTS

In 1996 the MLSCN developed a CPD policy guideline and mounted its first face to face interaction in November. However it was only able to organize 10 CPDs between 1996 and 2008 because of costs and other challenges.In 2011, AMLSN and MLSCN became recipients of a USAID award to develop an e learning CPD programme for members and review the old CPD administration and governance structure.The 1996 policy underwent revisions in 2012 and 2015.The revisions triggered a vista of activities in the CPD circuit opening new opportunities for meeting requirements for earning CPD credits resulting in 443 CPD programmes between 2012 and 2017; a massive 440% increase.

CONCLUSIONS

This paper traces the evolution of CPD amongst MLS in Nigeria, the progress made and experiences gathered.It discusses the challenges encountered and how these were overcome.It attempts to provide a pathway for colleagues particularly in developing countries wishing to mount lifelong training for members.

ID: 14827 PIN: 94

ROTAVIRUS AND ADENOVIRUS FREQUENCY AMONG PATIENTS WITH ACUTE GASTROENTERITIS IN CENTRAL TAIWAN

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BACKGROUND-AIM

Viral gastroenteritis is the leading cause of server diarrhea among children and elder people. This highly contagious sickness can spread through contaminated food or close contact with people. Different kinds of viruses may widespread in the different season. The most common viruses include rotavirus and adenovirus. The purpose of our study was to investigate the frequency and incidence the acute rotavirus and adenovirus gastroenteritis in central of Taiwan.

METHODS

We collected the total of 1086 patients data with who had tested for rotavirus and adenovirus in Tzuchi Hospital from 2014-2016. Data regarding clinical findings were collected from the electronic records, retrospectively age, gender, and virus Ag test results. The immunochromatographic test for the qualitative determination of rotaviruses and/or adenoviruses in stool samples (RIDA®QUICK Rotavirus/Adenovirus Combi Test, R-Biopharm AG, Germany). Statistical analysis was performed with SPSS v. 11,5 statistical software. Chi-square test was used for classification variable analysis.

RESULTS

The positive rate or rotavirus Ag was 53.2% (n=112) in 539 cases. The positive rate of adenovirus was 10.0% (n=19) in 547 patients. and rota-adenovirus co-infection was 2.4% (n = 7). Most of the rotavirus cases were seen in spring season ($p < 0.012$). However, there are no differences of adenovirus infection in different seasons and two genders.

CONCLUSIONS

Rotavirus can cause gastroenteritis in all ages, especially more commonly in infants and children. The symptoms of rotavirus among adults may not easily distinguish from other gastroenteritis. Viral Gastroenteritis Infection is more likely to be symptomatic in elderly individuals especially those living in nursing homes and immunosuppressed patients. The rate of positive results of rotavirus or adenovirus may vary in different age groups, geographic locations and seasons. Today, the rotavirus and adenovirus vaccines are not included in routine vaccination programs of Taiwan. However, the epidemic results and studies may help for the future public health policies and may introduce effective and protective vaccines in our country.

ID: 14857 PIN: 95

THE RESULT OF THE BIO-MARKERS DETERMINATION AMONG THE PEOPLE WITH HEPATITIS B

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BACKGROUND-AIM

Liver viral infection is a main cause of liver cirrhosis and liver cancer, and has become one of the major public health challenges in the world. According to the report of WHO Global Hepatitis report, 2017, the prevalence of HBV infection is estimated to be around 3.5 million people or 257 million people worldwide. According to a survey conducted by Mongolian researchers, 9.6% of the healthy population, 5.2-9.8% of the children, 8.2% of people who were tested to become blood donors, and 49.5-56.3% of patients with chronic liver disorders had hepatitis B.

METHODS

In this study, cross-sectional study a multi-stage sampling method was used for selecting people aged 40-64 of Huvsgul and Govi-Altai province, Mongolia. The study was carried out between November, 2016 and October, 2017. Laboratory parameters were determined by chemiluminescence enzyme immunoassay method with fully Automated Immunoassay system HISCL-5000 of Sysmex. This study financially supported by Sysmex Corporation of Japan, Tottori University of Japan and Science Technology Foundation of MNUMS.

RESULTS

In this study, total of 309 people, aged between 40 and 64 and from them, 118 were men and 191 were female. The HBsAg had been detected in 13.9% of the total participants and 14.4% of men and 13.6% of women had hepatitis B or HBsAg positive. People with hepatitis B were classified by age groups, as following: Hepatitis B was detected in 11.2% of people aged 40-44, and in 7.3% of people aged 45-49, and in 19% of people aged 50-54, and in 26.5% of people aged 55-59 and in 21.1% of people aged 60-64, respectively.
Anti-Hbe marker was positive in 10.2% of men and 11% of women with viral hepatitis B and HBeAg was positive in 1.7% of men and 1.6% of women. The anti-HBc marker was positively identified in 63.6% of men and 61.8% of women in the study and for the anti-HBs marker, it was detected in 33.1% of men and 28.3% of women.

CONCLUSIONS

Among the participants of the study, the viral hepatitis were detected in 13.9% of people and the high prevalence were occurred among the people aged 50-64 years. For the serum Anti-Hbe and HBeAg markers' level of the people with hepatitis B, there was no significant difference in age groups and sex. Immune due to natural infection is estimated to be 30.1%.

ID: 14858 PIN: 96

RESULTS OF THE STUDY ON THE CHANGES OF SERUM M2BPGI AND AFP LEVELS DURING HCV INFECTION

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BACKGROUND-AIM

Despite HCV infection is the major risk factor for developing HCC, cirrhosis has been diagnosed simultaneously in 85-95% of patients with HCC. In our country, exposure to HCV infection is 11-16 percent, which makes Mongolia - a country with a high prevalence of this infection. According to our researchers, HCV infection accounted for 35-45% of patients with HCC. Therefore, in Mongolia, it is necessary to take action of control and need to take preventative measures by detecting the viral hepatitis in early stage, and determining spread of disease and liver scarification and preventing risk factors.

METHODS

In this study, cross-sectional study a multi-stage sampling method was used for selecting people aged 40-64 of Huvsgul and Govi-Altai province, Mongolia. The study was carried out between November, 2016 and October, 2017. Laboratory parameters were determined by chemiluminescence enzyme immunoassay method with fully Automated Immunoassay system HISCL-5000 of Sysmex. This study financially supported by Sysmex Corporation of Japan, Tottori University of Japan and Science Technology Foundation of MNUMS.

RESULTS

In this study, total of 309 people, aged between 40 and 64 and from them, 118 were men and 191 were female. The anti-HCV has been detected in 15.2% of total participants and if we consider the sex of participants, 14.4% of men and 15.7% of women had hepatitis C. People with hepatitis C were classified by age groups, as following: hepatitis C was detected in 9.5% of people aged 40-44, and in 15.9% of people aged 45-49, and in 19% of people aged 50-54, and in 26.5% of people aged 55-59 and in 15.8% of people aged 60-64, respectively.
The liver Fibrosis Marker -M2BPGi was higher than reference value in 41.1% of total participants and also, this marker was positive in 34.7% of individuals without HCV infection and in 76.6% of HCV-infected individuals and they were statistically significant (P=0.0001). The AFP had been increased in 2.1% of people with HCV infections. Among the M2BPGi positive people, 3.1% of them had high level of AFP.

CONCLUSIONS

15.2% of people aged 40-64 years in Gobi-Altai and Huvsgul province, have C virus viral hepatitis. The Liver Fibrosis Marker -M2BPGi was positive in 76.6% of people with viral hepatitis C.

ID: 14860 PIN: 97

EVALUATION OF A REAL-TIME REVERSE TRANSCRIPTION-PCR METHOD FOR THE DIAGNOSIS OF ENTEROVIRUSES INFECTION

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BACKGROUND-AIM

Human enterovirus (EV) is a major cause of infection in children, especially in neonates and young infants. Nucleic acid based methods are fast and highly sensitive tools for the diagnosis of enteroviruses. The aim of this study was to evaluated the performance of a real-time RT-PCR assay kit, TIB MOLBIOL LightMix® Modular Enterovirus kit, based on TaqMan technology for the detection of enteroviruses on LightCycler® 480 II system. Besides, we compared the results of the real-time RT-PCR with a routinely used in-house semi-nested RT-PCR, using clinical samples and proficiency testing samples of College of American Pathology (CAP).

METHODS

The lowest limit of detection (LOD) of the kit was evaluated by testing 20 repeats with 10 copies and 20 copies of control RNA. To compare the sensitivities of real-time RT-PCR and in-house semi-nested RT-PCR, tenfold serially diluted Echovirus 6 isolated from A-549 cell line were tested in triplicate for each of the two methods. Twenty-three clinical samples and three CAP proficiency testing samples were tested parallel to compare the performance of the two methods. Furthermore, a zebrafish DNA standard was tested to be used as an internal control to monitor the existence of inhibitor. Zebrafish DNA standards of 10^3, 10^4 and 10^5 copies were spiked into serial diluted Echovirus 6 samples separately and run real-time RT-PCR in triplicate.

RESULTS

The LOD result of the kit was 20 copies/reaction, slightly different from the LOD of 10 copies/reaction indicated in the package insert. In the sensitivity test, both methods detected viral titer more than 10 1.25 TCID50, and two thirds of 10 0.25 TCID50 viral titer were detected only by semi-nested RT-PCR assay. The value for kappa of real-time RT-PCR and semi-nested RT-PCR is 0.82, indicating a very good agreement between the two methods. The standard deviations (SD) of Cp values of real-time RT-PCR for Echovirus 6 samples spiked Zebrafish DNA were all <0.25, revealed that the addition of zebrafish DNA standards as internal controls did not affect the PCR reaction.

CONCLUSIONS

In this study, although semi-nested RT-PCR seems to be slightly more sensitive than LightMix® Modular Enterovirus real-time RT-PCR assay, however, real-time RT-PCR assay is more rapid and labor-saving compared to the semi-nested RT-PCR assay.

ID: 14998 PIN: 98

ESTABLISHING PHENOTYPIC SUSCEPTIBILITY TESTING OF HERPES SIMPLEX VIRUS (HSV) TO ACYCLOVIR (ACV) USING THIAZOLYL BLUE TETRAZOLIUM BROMIDE (MTT) METHOD

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BACKGROUND-AIM

ACV is the most widely used antiviral agent for treating HSV infections. ACV resistance is rare and has little clinical relevance in immunocompetent persons. Due to prolonged treatment or prophylaxis, ACV resistance is most common in the immunocompromised, and is associated with therapy failure. The plaque reduction assay (PRA) was the first established test for antiviral susceptibility and is a Clinical Laboratory Standards Institute (CLSI) approved method. However, the assay is labor intensive and viral plaque enumeration is subjective and binary (i.e. plaques are either present or absent). This study sought to establish a phenotypic susceptibility test for HSV to ACV using MTT method, which is less labour intensive and less subjective than the PRA.

METHODS

Both ACV –sensitive and –resistant reference strains were stored at -80°C in single-use aliquots of 0.2 mL. Susceptibility to ACV was performed in 96-well microtiter plates using the MTT method. ACV at final drug concentrations ranging from 0.064 - 202.24 µg/mL was added to vero cells after HSV infection. The plate was incubated for 7 days at 36°C. The media was replaced with MTT and after incubation, the MTT solution was replaced with dimethyl sulfoxide. The colour that developed was measured at 570 nm and IC50 was calculated using Magellan Software. The acceptable IC50 range for each reference strain was determined by repeat testing on 10 separate runs. PRA was performed on the two reference strains according to the CLSI method. The cut-off values for ACV susceptibility recommended by CLSI were used; IC50 < 2 µg/mL is interpreted as susceptible and IC50 ε 2 µg/mL is interpreted as resistant.

RESULTS

The acceptable ranges (Mean ± 1.5 SD) of IC50 for ACV –sensitive and –resistant reference strains were 0.21 – 0.89 µg/mL and 2.78 – 9.18 µg/mL, respectively. The results produced by the MTT method were comparable to the PRA method. These reference strains will be included with each run for assay validation.

CONCLUSIONS

Phenotypic susceptibility testing of HSV to ACV as a potential laboratory diagnostic method was established in the study. The established assay is a less labour intensive and less subjective alternate to PRA method. It shows promise for diagnostic use in the laboratory.

ID: 15068 PIN: 99

TO WHAT EXTENT CAN INTENSIVE ADHERENCE COUNSELING IMPROVE VIRAL LOAD NON SUPPRESSION? THE VIROLOGIC AFTERMATH FROM A RURAL HIV CLINIC IN EASTERN UGANDA

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BACKGROUND-AIM

Intensive Adherence Counseling (IAC) is counseling presented to patients with non-suppressed Viral Loads (VLs). It aids a client in developing an ample plan for adherence to Anti-retroviral drugs (ARVs). Herein, obstacles are identified, possible solutions are explored and a road map to medication adherence is prepared. IAC involves a Multidisciplinary team.
According to June 2017 data from Central Public Health Laboratories (CPHL), 3269 clients had non-suppressed Viral Loads (VLs). 1100 IACs were done, 700 suppressed and 405 needed resistance testing. We sought to determine the virologic outcome of VLs for clients that completed all their IAC sessions and had a VL test between June 2015 – December 2017 in TASO Soroti.

METHODS

A Retrospective study that looked at correlates of a second non-suppressed VL after a first non-suppressed VL and three IAC sessions was conducted on 100 randomly selected records between June 2015 – December 2017 at TASO Soroti Center of Excellence HIV Clinic in eastern Uganda. Data was extracted from the national Central Public Health Laboratories (CPHL) VL dashboard and non-suppressed register and recorded into excel sheets. Analysis was done using STATA version 13 software and different variables were determined.

RESULTS

Males were more likely to be non-suppressed (OR=2.25, p-value=0.06). Adolescents and children were 3 times more likely to be non-suppressed compared to adults, though this was not statistically significant.
65% of the clients were non-suppressed. 60% (n=39)) of the non-suppressed clients were males. However, there was no significant relationship between sex and suppression status.

CONCLUSIONS

Most clients will have VL non-suppression after IAC with males and adolescents predominant. If the third 90 is to be achieved, we must re think around strategies to support these categories otherwise the UNAIDS 2020 goal shall remain a dream.

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ENZYME ASSAYS ON LEUKOCYTES IN THE DIAGNOSIS OF LYSOSOMAL STORAGE DISORDERS - DATA COLLECTION: YEARS 2007 – 2017

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INTRODUZIONE

Background:The assaying of lysosomal enzymes offers a non-invasive laboratory technique for confirming a diagnosis of a lysosomal storage disorder (LSD).
Around 50 LSDs have been described so far (with an estimated prevalence of 1:7000). LSDs are inherited metabolic diseases caused by mutations in the genes coding for lysosomal enzymes or structural lysosomal proteins. The deficit of a lysosomal protein disrupts important catabolic pathways involved in lysosomal degradation leading to intracellular accumulation of undegraded macromolecules. Lysosomal deposits are progressive and lead to tissue damage and disease.
AIM: Retrospective analysis of lysosomal enzyme tests performed over a 10-year period (2007-2017) at our Centre.

METODI

Micrometric assays of lysosomal enzyme activities using fluorimetric or colorimetric methods based on specific artificial substrates. Specimens: leukocytes, lymphocytes, fibroblasts and plasma. Enzyme activities were normalized by measuring total protein contents of samples by the standard BCA method.

RISULTATI

We set up the assays of 19 lysosomal enzymes to use routinely in the differential diagnosis of LSDs. We participated in an external quality control program (ERNDIM) to guarantee the accuracy of the method. Over the period 2007-2017, we analyzed more than 2500 samples from patients suspected of having an LSD. 8% of samples were positive for a lysosomal enzyme deficit. Deficiencies detected were distributed as follows: 33% alpha-galactosidases (Fabry's disease), 28% alpha-glucosidase (Pompe's disease), 11% beta-galactosidase (Galactosidosis GM1 / Morquio B), 3% beta-glucosidase (Gaucher's disease), 5% GALNS (Morquio A disease), 2% neuraminidase (Sialidosis), 2% cathepsin A (Galactosialidosis) and 3% arylsulfatase A (metachromatic leukodystrophy). We also set up enzyme assays on plasma samples for the differential diagnosis of mucolipidosis. We identified 6 patients suffering from mucolipidosis.

CONCLUSIONI

Our experience shows the importance and the benefits of performing enzyme assays on leukocytes/lymphocytes and/ or plasma for confirming an LSD diagnosis. Assays of lysosomal enzymes are non-invasive and are less expensive and faster than gene sequencing.

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Interprofessional Corporation, in the pre-analytical phase - Lerbech Jensen Charlotte	18	15102
Day-to-day variation in IHC and the influence of fixation - Gabriel Holst Cecilia	19	15103
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Improvement of the medical result reporting system based on patient's seasonal visiting pattern Lu Hsiu-Chin	21	15130
Pre-analytical process improvement for patient with abnormal hypernatremia by root cause analysis - Chien Mei-Kuei	22	15137
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TITLE AND AUTHOR	PANEL	PIN CODE
Preanalytical storage of tumormarkers CA 19-9 and CA 15-3 - Birkekaer Christensen Marianne	26	15209
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Glucose level during storage of platelet concentrates collected with Amicus and Trima apheresis machines. - Haugnæss Lene	37	15300
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Effects of Substrate Rigidity on Epithelial Cancer Cell Lines features - Ansardamavandi Arian	40	15470
Landscape and prognostic significance of coexisting mutations in pediatric MLL-rearranged AML Matsuo Hidemasa	41	15276
Spikes in EEG Test Results of Patients with ADHD symptoms - Chuang Hui Yu	42	15010
X-linked chronic granulomatous disease induced hemophagocytic lymphohistiocytosis: a rare case report - chen shin huei	43	15051
Molecular characterization of rotaviruses among children Under 5 Years with gastroenteritis in Kenyatta National Hospital, Kenya - Zablon Jeremiah Omari	44	15065
Titration of IgG blood group antibodies after the inactivation of IgM antibodies using Dithiothreitol (DTT) Giordmaina Antonella	45	15080
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Development of Novel Multi-Test VITROS® XT Chemistry Products Slides* to Enhance Pediatric Testing - Di Magno Ted	47	15106
Study of cryptoporidiasis in a pediatric population without a criteria for hospital admission from primary care Peral-Camacho Ignacio	48	15154
Influence of fetal sex on markers of risk used in trisomy 21 prenatal screening Viloria-Peñas María del Mar	49	15156
Ocular manifestations in children with persistent diarrhea syndrome due to Giardia lamblia Viloria-Peñas María del Mar	50	15158

TITLE AND AUTHOR	PANEL	PIN CODE
Improving the effectiveness of the tuberculosis reporting at a regional teaching hospital in central Taiwan Yeh Yu Han	123	14921
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Utility of Urine as a Clinical Specimen for the Diagnosis of Pulmonary Tuberculosis in People Living with HIV in Addis Ababa, Ethiopia - Chemeda Ifa Alemu	126	15028
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Prevalence of Gonorrhea infection and drug sensitivity pattern among patient presenting with genital discharge in the OPD clinic at Mbarara Regional Referral Hospital - Ndarubweine Joseph	129	15174
Effectiveness of polymerase chain reaction in diagnosis of Hansen's disease - Liao Hao-Hung	130	15238
Effect of proanthocyanidin on urothelial cell damage by UPEC infection - Noguchi Keita	131	15239
Effect of farnesol on biofilm formation and related factors of Pseudomonas aeruginosa - Suzuki Satoru	132	15242
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Global Perspective of Medical Laboratory Practices: Major Challenges, Controversies and Possible Solutions Sehrawat Kaptan Singh	135	14993
Celebrating the International Biomedical Laboratory Science Day in Norway – The Recent 5 years' experience Piiksi Eva Lisa	136	15073
The Process of Creating Civility Norms Garmo - Nilsson Anna	137	15111
Role of BLS beyond the Hospital - Sakamoto Hideo	138	15142
Regional laboratory workforce development: key driver to global health security okara Godswill Chikwendu	139	15220
Biomedical Scientists in Europe: The Health of the Profession - Culliton Marie	140	15308
Development of sustainable collaboration between international partners – BLS at Cape Peninsula University of Technology (CPUT) and Western University of Applied Sciences (HVL) - Braseth Turid Aarhus	141	15412
Application of Confocal Microscopy with Tissue Clearing System to Clinical Diagnosis in Molecular Pathology Lee Taebok	142	14780
NDST4 expression modulates tumorigenesis and macrophage polarization in colorectal cancer Yang Ya-Chien	143	14818
The modulation of ERK½/JNK/p38k signal transduction by Hibiscus Taiwanensis extracts on breast cancer cells- Pan Lin Lin	144	14852
Genetic variants increasing serum pepsinogen 2 level in gastric cancer - De Re Valli	145	15120
The modulation of signal transduction pathway by bromelain in human prostate cancer cell - Pan Lin Lin	146	14946

TITLE AND AUTHOR	PANEL	PIN CODE
Clinical chemistry reference intervals of healthy adult populations in Gojjam Zones of Amhara National Regional State, Northwest Ethiopia - Tsegay Yakob	226	15187
Effects of hydrogen-rich water on the levels of GH, IGF-1, hsCRP, and MDA-LDL in healthy people Inoue Keiko	227	15200
The influence of training outcome and competency on effective utilization of malaria microscopy result by health professionals in South Eastern Nigeria Okoro Chinyere	228	15217
Two Cases of Cryoglobulin-positive Waldenstrom's Macroglobulinemia: Case Report - Chen Yi Shun	229	15226
An integrated medical care to enhance the effectiveness of clinical diagnosis and treatment of Group A streptococcus pharyngitis in children - Chang Hui-Ju	230	15234
Managing Acute Ischemic Stroke: Evaluation of New Strategies for Critical Values Notification and Turnaround Time of Coagulation - Tu Chi Chao	231	15266
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Thyroid hormones in male infertility among nigerians subfertile couples Oyedeji Samuel Oyewole	233	15254
Association of relative expression of miR-143 and miR-33b soluble levels with adiponectin multimeric forms, corporal redistribution of fat mass and immunometabolic markers in individuals with obesogenic phenotype Corona-Meraz Fernanda-Isadora	234	15258
Single nucleotide polymorphisms in LEP – 2548 G>A y LEPR + 668 A>G in Rheumatoid arthritis Mexican mestizos: association with age at diagnosis, diseases activity and anti-CCP antibodies - Madrigal-Ruiz Perla-Monserrat	235	15259
Adiposity and low-grade inflammation are related with the production of multimeric forms of Adiponectin and C3 levels in obesity and insulin resistance - Navarro-Hernandez Rosa-Elena	236	15260
Rapid detection of Mycoplasma pneumoniae by Loop-mediated Isothermal Amplification (LAMP) assay in acute respiratory tract infection in Pediatric Patients - Lin Mei-Hsiu	237	15262
A Smartphone App for Improvement of Ward Morning Blood Draws of the Stat Laboratory Orders Huang Ya Fang	238	15265
Improve the Sample Quality for Cepheid GeneXpert BCR_ABL Quantification - Chang Ming Jen	239	15278
Comparison between two biochemistry analyzers for the determination of transthyretin - González Benito Daniel	240	15280
Evaluation of the accuracy and clinical value of albuminuria detection using a new urine dipstick - Lin Hsiao-Wei	241	15290
Cluster Band method in laser flow cytometry analysis of rod or cocci/mix growth bacteria: comparisons with classical UF1000i method - Yang Chun-Chun	242	15292
Crohn's Disease biologic therapies advances: A current review - Mendes Fernando	243	15301
Bronchoalveolar lavage findings in patients with interstitial lung diseases - Jose Luis Garcia de Veas Silva	244	15311
Multiple Myeloma: Algorithm to avoid delay in the diagnosis of patients with multiple myeloma at emergency service - Garcia de Veas Silva Jose Luis	245	15313
Multiple Myeloma: Laboratory biomarkers in the identification of residual disease - Garcia de Veas Silva Jose Luis	246	15314
Application of photometric-based LAL test for radiopharmaceutical injections - Park Jun Young	247	15318

TITLE AND AUTHOR	PANEL	PIN CODE
Intoxications by heavy metals in patients with hip arthroplasties - Fernandez-Ibanez Ana	325	15026
Use liquid chromatography-tandem mass spectrometry to quantitative unbound/total plasma voriconazole concertration in therapeutic drug monitoring - Wang Tuan Jen	326	15090
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Quantitative proteomic approach targeted to fibrinogen β chain in tissue gastric carcinoma - De Re Valli	328	15123
MALDI-TOF MS: Rapid and reliable identification of hazard group 3 bacteria - Sandhu Jaswinder	329	15210
Efficient and accurate quantitative analysis of five antiepileptic drugs in human serum by LC-MS/MS - Lee See Bong	330	15243
Exploring serum metabolomics to implement risk criteria for first-degree relatives (FDR) of gastric cancer (GC) patients - Corona Giuseppe	331	15285
Evaluation of commercial biochemical identification systems and two matrix-assisted laser desorption ionization-time of flight mass spectrometry systems for identification of genetically confirmed viridans group streptococci isolates - Lee Taifen	332	15325
Levels of homocysteine, high-density lipoprotein cholesterol, and waist to hip ratio are related with ankle brachial index in patients with type 2 diabetes mellitus and hypertension - Wang Yi-Mei	333	14792
Role of standard markers and HSP 70 in diagnostic and prognostic managing of ACS - Domazetovska Saska	334	15014
Relationship between lipids and insulin resistance in apparently healthy adults in Enugu, Nigeria - Chukwukelu Ekene	335	15054
Cardiomyocyte Number Expansion is Limited to the Neonatal Mouse - Alkass Kanar	336	15075
Genetic thrombofilia and thrombosis of venous longitudinal sine Lepe-Balsalobre Esperanza	337	15152
Increased Serum Leptin Levels Among Body Mass Indexed-Obese Filipinos Aged 20 to 44 in Assessing the Potential Risk for Venous Thromboembolism - Sison Ron Christian	338	15173
Hematocrit, uric acid, and high sensitivity-C reactive protein are related with pulse mass index in middle-old aged T2DM patients with normal renal function - Wang Yi-Mei	340	15201
Revisiting the outcome of RBC transfusion in cardiac surgery patients in northern Taiwan - Lee Chun-Chang	341	15273
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