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DENTAL TREATMENT ON CEPHALEA FROM OROFACIAL ORIGIN

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ABSTRACT

Introduction: Cephalea from orofacial origin is a diffuse, mild to moderate pain that appears as a bandage around the head. There are many different etiological causes of dental origin that contribute to the appearance of cephalea.

Purpose: The purpose of our research is dental treatment of patients with traumatic occlusion, bruxism and loss of occlusal support, which have a pathological condition - cephalea from orofacial origin.

Material and methods:For the purposes of this paper, 15 patients with cephalea from orofacial origin were analysed, diagnosed and treated. The control group consisted of 15 patients without etiological factors. A butterfly deprogrammer and a stabilization splint were made depending on the indication.

Results and discussion: According to our patient study results, it appears to be a link between inadequately made prosthetic devices, bruxism and loss of occlusal support with cephalea. The therapy should help the patient urgently and continue to relieve the cephalea symptoms from orofacial origin. The results show an improvement in 86.7% of the examinees.

Conclusion: The butterfly deprogrammer and stabilization splint are new methods that can contribute along with other therapeutic modalities in improving the quality of life in a patient with cephalea from orofacial origin.

Keywords: Cephalea, orofacial origin, butterfly deprogrammer, stabilization splints

INTRODUCTION

Cephalea from orofacial origin is a diffuse, mild to moderate pain that appears as a bandage around the head. It represents a constant, persistent and unstoppable headache and distinguishes it from other forms of headaches based on the location of its manifestation. There are sinus, ocular, migrainose and other types of headaches [1].

Patients describe the pain originating from cephalea that is manifested as a pressure around the head that can appear bilaterally. It may have a different time interval over a period of several days to weeks. It is important to perceive and evaluate the patient's subjective findings and to compare them with objective clinical findings and evidence.

Many studies have shown that there is a connection between masticatory myofascial pain and cephalea from orofacial origin, although there are disagreements with regard to their similarities and comorbidity [2].

Entities like migraine and cephalea from oropharyngeal origin should be properly diagnosed and one of the differences is the possibility for the patient to perform his/her everyday tasks.

The primary reason for the misdiagnosis of cephalea is when it has an orofacial origin, which is known in separate studies and as a crossed headache. Therefore, doctors of medicine and dentistry should practice a new chapter in their contemporary dental practice in diagnosing patients with cephalea from orofacial origin. For this reason, it should be seen where one patient will be referred - whether a specialist in dental prosthetics or a specialist neurologist [3].

There are many different etiological causes of dental origin that contribute to the appearance of cephalea from orofacial origin. Whether it is a traumatic occlusion, bruxism or loss of occlusal support, all of these dental discrepancies lead to pain. The pain may have primary origin in the masticatory muscles, the temporomandibular joint, and because of the anatomy it is also reflected as pain in the head or neck. Therapeutic specialists in dental prosthetics produce various types of prosthetic devices, such as splints for the rehabilitation of this sensitive patient group [4].

PURPOSE

The purpose of our research is dental treatment of patients with traumatic occlusion, bruxism and loss of occlusal support who have a pathological condition - cephalea from orofacial origin. After the complete rehabilitation of the dental system, the aim of the therapist is to eliminate the symptoms of cephalea from orofacial origin and to preserve the achieved prosthetic success by applying modern methods and devices for this purpose.

MATERIAL AND METHODS

For the realization of the set goals, the examinations are carried out at the Public Health Institute University Dental Clinical Centre ”St. Pantelejmon‘‘-Skopje, at the Clinic for Dental Prosthetics and in the private dental clinic Kavaja, the department for dental rehabilitation in Pristina.

This study examines a total of 30 patients divided into two groups of 15. The first group is divided into three subgroups of 5 patients:

-5 patients with traumatic occlusion from improperly designed prosthetic devices (fixed bridges);

-5 patients with horizontal and vertical form of bruxism;

-5 patients with loss of occlusal support (Kennedy Class I, Kennedy Class II, Kennedy Class III).

The control group consists of 15 patients who do not have etiological causes as patients who are treated.

Before starting the procedure, each patient receives a form for compliance with the procedure and interventions. For the research being conducted, there is an agreement from the Ethics Committee of the Faculty of Dentistry in Skopje.

The procedures to be applied and the methods are as following:

1. Diagnosing the existence of cephalea from orofacial origin using the Helkimo index, anamnestic and clinical dysfunctional index;

2. Performing an extraoral clinical examination of the patient’s head by determining the localization of cephalea using the methods of palpation and inspection;

3. Extraoral clinical examination of the lower third of the face, muscles and temporomandibular joint (TMJ) with the methods of inspection, palpation, percussion and auscultation;

4. Performing an intraoral clinical examination of the teeth, their occlusion, position and condition and language analysis;

5. Diagnosing traumatic occlusion originating from improperly designed prosthetic devices and at the same time perceiving a plan of therapy (Fig. 1a and b);

a

Fig. 1. a, b *Patient with improperly designed fixed constructions*

6. Diagnosing bruxism (horizontal and vertical form) by means of a clinical examination and a paraclinical apparatus - a bruxchecker, as well as determining a plan for prosthetic rehabilitation (Fig. 2a and b);

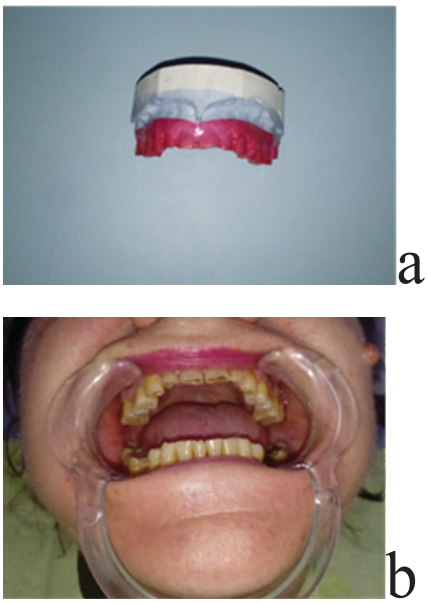

Fig. 2 a *Bruxchecker*
b *Patient with bruxism*

7. Diagnosing the loss of occlusal support for patients with Kennedy class I, II, III and determining methods for their rehabilitation (Figures 3 a and b);

Fig. 3. a, b *Patient with loss of occlusal support*

8. Developing an individual plan for dental treatment of cephalea from orofacial origin in the three groups of patients composed of three therapeutic modalities;

9. Rehabilitation of lost functional occlusion in the three groups of patients;

10. Creating an individually designed anterior deprogrammer – butterfly deprogrammer and when indicated a stabilization splint while respecting the principles of their production (Figures 4a, b);

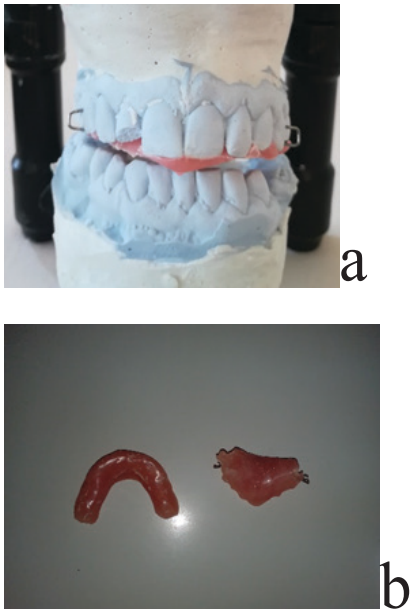

Fig. 4. a *Butterfly deprogrammer on studio models in an individual articulator*
b *Stabilization splint and butterfly deprogrammer*

11. Application of pharmacological therapy, light therapy (with a solux lamp), physiotherapy, psychotherapy;

12. Applying appropriate radiographic recordings before and after treatment.

Patient changes are recorded in separate folders. Patients are examined after a prosthetic rehabilitation has been achieved and after giving a butterfly

deprogrammer, after 1 week, 1 month, 3 months, 6 months and 12 months. If there is an indication after 6 months, stabilization splints are made.

For that purpose, in these patients, appropriate methodological clinical procedures for first aid - initial therapy and then for longer treatment are applied. The first aid in diagnosing cephalea of orofacial origin consists in educating patients about their condition, administering pharmacological therapy for the elimination of the symptoms and in case of severe pain, local anaesthetic in trigger points (masticatory muscles) may also be applied. Light therapy using a solux lamp is also applied. Thereafter, the initial therapy is monitored, which is followed by the pharmacological therapy of non-steroidal anti-inflammatory drugs. Physiotherapy and psychotherapy are also applied and the prosthetic rehabilitation of patients is performed. The direction of prosthetic therapy should be towards the treatment of traumatic occlusion caused by inadequately constructed fixed constructions. At the same time, we are striving to prevent the loss of the remaining teeth and damage of the periodontal complex, as well as the prevention of bone resorption of the remaining edentulous alveolar ridge. Furthermore, the possibility of preventing damage of the masticatory muscles, TMJ, i.e. the stomatognatic system in patients with bruxism, thus, the overall health of the human being is investigated. In patients with bruxism, opportunities for prosthetic rehabilitation are perceived. In patients with loss of occlusal support, in particular the route should be for prosthetic rehabilitation of the functional occlusion for the establishment of a psychosomatic equilibrium.

Long-term therapy is continued with pharmacological therapy followed by the development and application of anterior deprogrammers - butterfly deprogrammers. Butterfly deprogrammers are applied over a period of 6 months. They are expected to eliminate the cephalea from orofacial origin. If cephaleaof orofacial origin persists the manufacturing and usage of stabilization splints are applied. They may also be applied for a period of 6 months after which the reduction and elimination of cephalea from orofacial origin is expected.

RESULTS AND DISCUSSION

Table 1. *Questionnaire connected to the Helkimo anamnestic dysfunctional index (Ai) for etiological factors for cephalea from orofacial origin 155 patients were randomized to receive either PCA with remifentanil (80 patients) or intermittent epidural analgesia (75 patients) for painless delivery. Patient characteristics are given in Table 1.*

Serial number	Questionnaire for patients with cephalea of orofacial origin	n	%
1	Do you have sounds in the region of TMJ?	10	66.7
2	After awakening in the morning do you feel rigidity in the lower jaw?	3	20
3	Do you sense tiredness in the region of the TMJ?	11	73.3
4	Do you have difficulties when opening your mouth?	2	13.3
5	During opening the mouth do you have locked lower jaw?	1	6.7
6	Do you have pain in the TMJ or at the masticatory muscles?	15	100
7	Do you have pain when moving the lower jaw?	10	66.7
8	Do you have luxation at the lower jaw?	3	20
9	Do you have a headache?	15	100
10	Do you consider that the prosthetic constructions are well manufactured?	5	33.3
11	Do you grind your teeth?	5	33.3
12	Does losing teeth make you feel pain?	5	33.3
13	Total	15	100

Table 2. *Helkimo clinical dysfunctional index**

Helkimo Clinical Index*	Patients	Healthy		With etiological factors	
		n	%	n	%
	Without clinical symptoms	15	100	0	0
	Mild dysfunction	0	0	5	33.3
	Moderate dysfunction	0	0	10	66.7
Total		15	100	15	100

* Helkimo clinical dysfunctional index is based on clinical determination of

- changes in the mobility of the mandible
- damage of the function of the TMJ
- pain in the muscles
- pain in the TMJ
- TMD with the above mentioned methods of work.

Table 3. *Presence of symptoms before and after the therapy with prosthetic restorations, butterfly deprogrammer and stabilization splints*

Present symptoms anamnestically and clinically in patients	Before therapy		After therapy	
	n	%	n	%
	15	100	2	13.3
Total	15	100	2	13.3

Table 2 shows the average SpO2 and the mean In this paper, 66.7% of patients noticed presence of sounds in the TMJ area. Rigidity in the lower jaw has affected 20% of patients in this study and 73.3% feel fatigue in the area of the joint. At 13.3% of patients difficulty opening the mouth has been observed. Locked mandible syndrome appeared in 6.7% of patients. Pain in TMJ or mastication muscles occurs in all patients. Pain during the movement of the lower jaw is found in 66.7 of patients. Luxation of the lower jaw is seen in 20% of patients. Headache occurs in all patients. From the questionnaire on whether you think that prosthetic structures are not well-developed, 33.3% responded positively. Grinding of the teeth had 33.3% of patients. Also 33.3% of patients said that tooth loss causes them to experience pain.

Helkimo index, its dysfunctional value (calculated as the mean value) in mild dysfunction is present in 33.3% of patients. While moderate dysfunction is present in 66.7% of the subjects.

In 15 patients examined, butterfly deprogrammers were made and after wearing them,10 (66.7%) of them had improvement in the subjective and objective symptomatology after treatment for 6 months. In 5 (33.3%) patients, symptoms of cephalea from orofacial origin persisted after 6 months, due to which stabilisation splints were made. Completely treated stomatognatic system and eliminated cephalea was seen in 13 (86.7%) prosthetically rehabilitated patients. In 2 (13.3%), there was uncomfortable feeling with the need for prolongation of treatment.

Pryse-Phillips et al. found that patients with frequent episodes of this type of headache averaged with absence from work about 3 working days per month [6]. Stovner et al. in the study found that 12% of cephalea patients with oropharyngeal origin reported absenteeism during the previous years due to headaches [7]. That patients feel the burden of cephalea with orofacial origin is proven in this paper.

Inadequately manufactured prosthetic devices, such as fixed bridge constructions can cause problems with occlusion, leading to dental clinging. In this way, the masticatory muscles are tightened and overloaded, which can lead to the occurrence of cephalea from orofacial origin.

Daily and nocturnal bruxism, biting objects, protruding the mandible, biting nails are among the harmful oral habits called parafunctions [8, 9].

The major lesions caused by present bruxism can be perceived as: changes in the teeth, periodontium, mastication muscles, TMJ, headaches, behavioural and psychological effects [7].

Symptoms that patients experience from occlusal discrepancies are: stiff neck, headache, facial pain, earaches, clicking and cracking sounds when opening and closing the mouth, and when symptoms persist, arthritis of the joints may appear.

The loss of occlusal support from partial edentuloissness led to the formation of different classification systems. The loss of a particular group of teeth leads to different types of difficulties. In view of the presence of Godon's phenomenon, a group of teeth that have no contact and a group of teeth with premature contact emerged. Patients in the fight to find their bite begin to squeeze their teeth. This leads to hyperactivity of the masticatory muscles, problems in the temporomandibular joint, temporomandibular dysfunction (TMD), which may result in cephalea of orofacial origin [10]. An excessive force of the dental system is placed, which may be a trigger factor in the appearance of cephalea of orofacial origin [11].

Therapy of cephalea of orofacial origin with different etiology in literature is often associated with TMD. Studies show a reduction in the severity and frequency of headaches by the use of occlusal splints, occlusal adjustments or physiotherapy [5].

For acute reduction of symptoms of recurrent cephalea from orofacial origin, a companion of occlusal parafunctions and TMD, among other therapies, Kapusevska uses a butterfly deprogrammer. In this study, it proved to be an effective means of reducing symptomatology of cephalea with orofacial origin.

The studies conducted for the needs of this paper should provide a scientific contribution from the aspect of the preventive and therapeutic function of the butterfly deprogrammer and the stabilisation splints. Following the first aid, after initial therapy and long-term therapy described above, a complete elimination of cephalea from orofacial origin is expected.

CONCLUSION

The obtained results of this study confirm the effectiveness of the dental treatment for cephalea from orofacial origin. A special emphasis is placed on the production of a butterfly deprogrammer and a stabilisation splint.

The butterfly deprogrammer and the stabilisation split are a new modern method and there are various possibilities for their manufacturing and they should be implemented in the everyday dental practice. With first aid, patients are relieved of the appearance of cephalea at the first visit at the dentist. Then, with initial and prolonged therapy, oral health improves with the prevention of damage to all structures of the dental system, thereby protecting the overall health of the patient. This would improve the patient's quality of life and increase the dental team's satisfaction.

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Резиме

СТОМАТОЛОШКИ ТРЕТМАН НА CEPHALEA ОД ОРОФАЦИЈАЛНО ПОТЕКЛО

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Вовед: Cephalea од орофацијално потекло претставува дифузна, блага до умерена болка, која се јавува како завој околу главата. Постојат повеќе различни етиолошки причинители од дентално потекло, кои придонесуваат за појавата на cephalea.

Цел: Стоматолошки третман на пациенти со травматска оклузија, бруксизам и со губиток на оклузална поткрепа, а кои имаат појава на патолошка состојба – cephalea од орофацијално потекло претставуваат цел на нашето истражување.

Материјал и методи: За потребите на овој труд беа анализирани, дијагностицирани и третирани 15 пациенти со cephalea од орофацијално потекло. Контролната група се состоеше од 15 пациенти без етиолошки фактори. Беа изработувани пеперутка депрограмер и стабилизациски сплинт зависно од индикацијата.

Резултати и дискусија: Од испитувањата на пациентите произлегува дека постои поврзаност меѓу несоодветно изработените протетички помагала, бруксизмот и губењето на оклузалната потпора со cephalea. Терапијата треба да му помогне на пациентот ургентно за да се продолжи со неа и да се олеснат симптомите на cephalea со орофацијално потекло. Од резултатите се согледува подобрување кај 86,7% од испитаниците.

Заклучок: Пеперутка депрограмерот и стабилизациските сплинтови се нови методи, кои можат да придонесат, заедно со другите терапевтски модалитети, за подобрување на квалитетот на живот кај пациент со cephalea од орофацијално потекло.

Клучни зборови: цефалеа, орофацијално потекло, пеперутка депрограмер, стабилизациски сплинт