

CASE REPORT

MULTIVISCERAL RESECTION FOR ADVANCED DUODENAL ADENOCARCINOMA: A CASE REPORT AND REVIEW OF LITERATURE

Aleksandar Mitevski¹, Svetozar Antovic², Biljana Kuzmanovska³, Nikola Jankulovski²

¹ Clinical Hospital, Stip, R. Macedonia

² University Digestive Surgery Clinic, Skopje, R. Macedonia

³ KARIL (Clinic for Anaesthesia Reanimation and Intensive Care), Skopje, R. Macedonia

Corresponding Author: Aleksandar Mitevski, Stip Clinical hospital, Ljuben Ivanov bb, Stip, R. Macedonia; Tel.: +389 (0)2 072 22 19 03; E-mail: acence03@yahoo.com

Abstract

The aim of this paper is to address adenocarcinoma of the duodenum by reporting a case, reviewing the literature and discussing current knowledge, diagnostic modalities and treatment options. We present a case of a 42-year-old patient with duodenal adenocarcinoma at the second portion invading surrounding organs. The patient had a previous history of colon malignancy and was diagnosed with a new tumour formation on regular CT (computed tomography) follow-up. Pylorus-preserving pancreaticoduodenectomy (PPPD) was performed for this T4 N2 M1 tumor.

Duodenal adenocarcinoma is a rare tumor, most frequently involving the second duodenal portion. It has no specific symptoms and it is difficult to diagnose it due to its rarity and clinical presentation. Diagnosis, exact localization, and involvement of lymph nodes and surrounding organs have an impact on surgical strategy and prognosis.

Key words: duodenum, duodenal adenocarcinoma, second duodenal portion, surgery, pylorus preserving pancreaticoduodenectomy, PPPD.

Introduction

Although the small intestine represents 90% of the gastrointestinal mucosal surface, malignancies of the small intestine account for only 1% [1, 2]. Duodenal involvement is 30–45% with the most frequent location at the second portion (42.8–81.8%) [3].

Clinical presentation of duodenal carcinoma is unrevealing. Abdominal cramps, nausea and postprandial pain are nonspecific and lead to misdiagnosis and delay in diagnosis. Intestinal obstruction, anaemia, weight loss, jaundice, secondary to biliary obstruction and palpable abdominal mass are related to advanced disease. [1, 4–6]

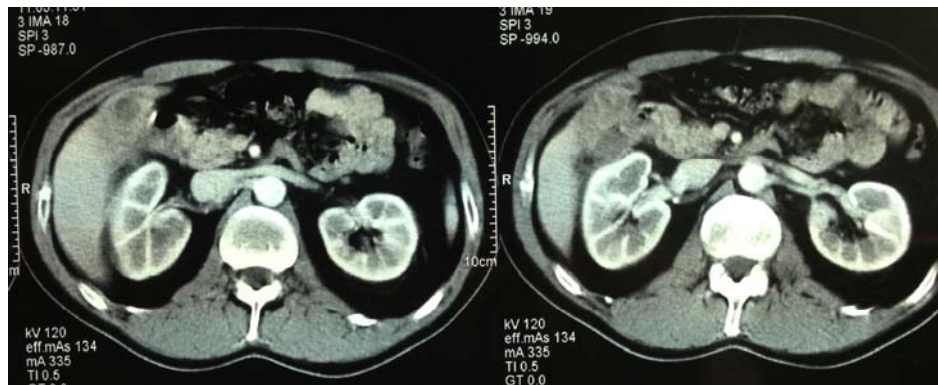
We report a case of advanced duodenal adenocarcinoma and discuss diagnosis, treatment and prognostic factors by reviewing the literature.

Case presentation

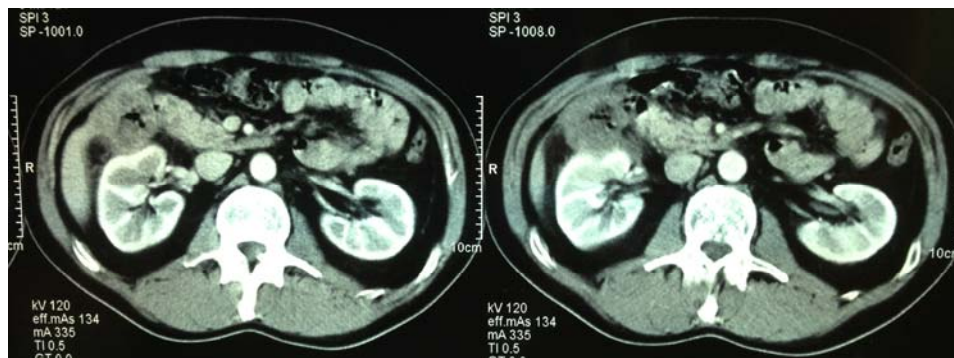
A 42-year-old patient presenting with tumour formation in the second portion of the duodenum involving the right kidney. The tumour formation was diagnosed after a regular yearly follow-up when CT of the abdomen was performed. The patient was admitted as an acute abdomen case 3.5 years ago in emergency setting and was operated on. Obstructive carcinoma of the caecum with consecutive perforated appendicitis was found. A right haemicolectomy with ileo-transverso anastomosis was performed. The pathologist report was: Adenocarcinoma of the caecum, acute gangrenous perforated appendicitis with diffuse fibrino-purulent peritonitis. The pathological stage of the tumor was pT3 pN1 pMx, of 15 lymph nodes, 2 had metastatic deposits. Regular follow-up was performed, on the second early colono-

scopy two polyps were diagnosed on the remaining colon (one on the sigmoid and one on the rectum). On the CT scan tumour formation invading the duodenum, right kidney and liver was suspected (**Plates 1, 2 and 3**). Upper gastrointestinal endoscopy was performed and involvement of the duodenum was confirmed. CEA and CA 19-9 antigens were in the normal range on follow-up. The patient reported that he had had some back pain in the last two months and noticed a black stool from time to time; he lost 5–7 kg in that time. Explorative laparotomy was performed and the tumour formation was evaluated, no distant metastasis and no peritoneal involvement was confirmed. Tumor formation extended from the second portion of the duodenum to the flexure between the second and third portions. The fundus of the gall bladder, a portion of the 5th segment of the liver and right kidney were also involved in the tumour. Considering the patient's age and condition, extensive surgical treatment was performed. "En block" resection of the 5th liver segment, cholecystectomy, right nephrectomy and pylorus-preserving pancreaticoduodenectomy. The postoperative period was prolonged, a

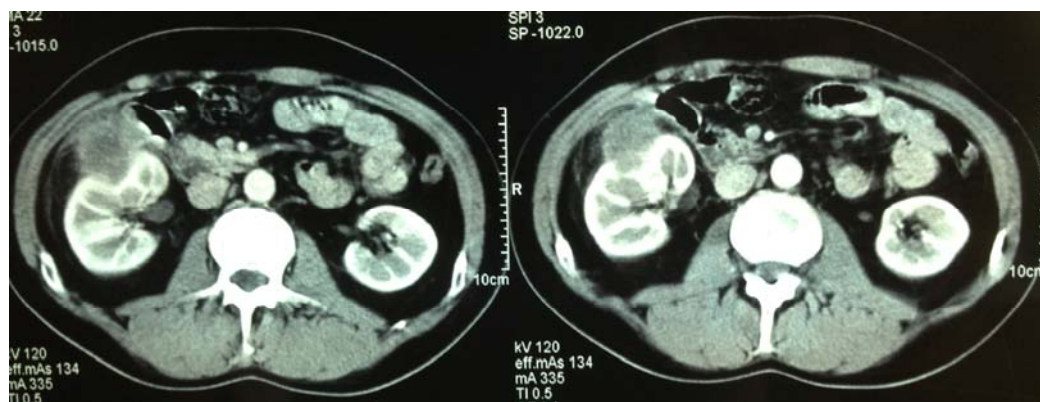
small pancreatic leakage was evident on the 5th postoperative day but was treated conservatively. Leakage was localized and drained on a drainage tube placed intra operative ly and ceased on the 14th day. Oral feeding was resumed on the 10th day and the patient was discharged on the 15th postoperative day. The histopathological findings reported: Adenocarcinoma of the duodenum with invasion of the gall bladder, liver and right kidney. A negative margin of resection was confirmed, of 13 lymph nodes 4 had metastatic deposits. The pathological stage was pT4 pN2 pM1 (invasion in the kidney was considered as metastasis). Since the patient had been operated previously for adenocarcinoma of the colon the first impression was that it was a recurrence. Hystopathological immunohistochemical analysis implied that the primary origin of this adenocarcinoma was the duodenum (strong membrane stain for CKWS, cytoplasmic granules positive for chromogranin, some cells showing cytoplasmic positivity for NSE and discrete positive signal of tumour cell on TTF (Picture 4). Adjuvant chemotherapy was advised by the oncologist.



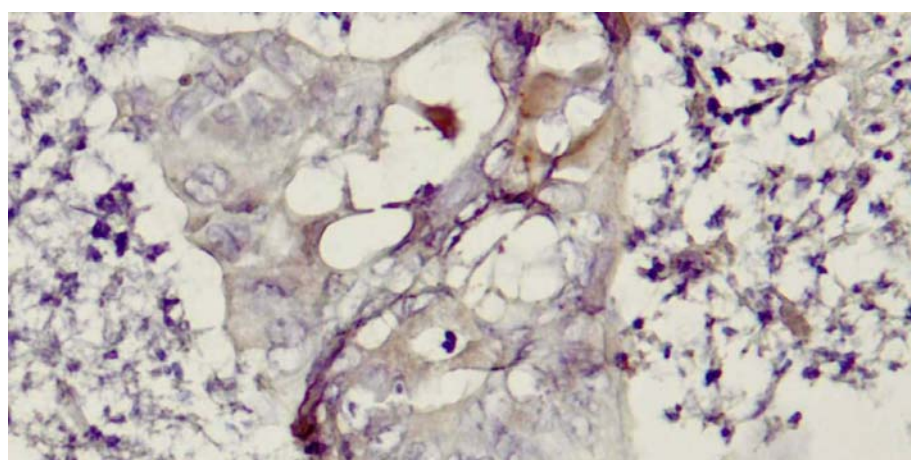
Picture 1 – Infiltration of the gall bladder and hepatic tissue



Picture 2 – Position the tumor arising from duodenum between the kidney and liver



Picture 3 – Involvement of the right kidney



Picture 4 – TTF -thyroid transcription factor positive tumor cells

Discussion

Primary adenocarcinoma of the duodenum is rare [1, 2]. Involvement of the second portion is the most common [3] and the case we present can be included in this group.

In our case symptoms were obscured by the fact that the patient had had previous colon malignancy. Black stool, back pain and weight loss could point towards upper gastrointestinal process [8] and lead to endoscopy, but attention was directed towards a regular follow-up and previous malignancy. Colorectal cancer increases the risk of developing small bowel cancer, other conditions such as FAP (familial adenomatous polyposis), HNPCC (hereditary non-polyposis colon cancer), Peutz-Jeger and Crohn disease also increase the risk [4, 5, 7].

Endoscopy was performed and the biopsy was negative. Upper gastrointestinal endoscopy is the diagnostic procedure for duodenal tumours over 25% [3, 9, 10]. The advantage is visualization of the process and the opportunity to

perform a biopsy. In our case endoscopy was performed after the CT of the abdomen when a mass in the upper right abdomen involving the duodenum was found.

CT is required for confirming, staging and treatment planning. Using CT enteroclysis (CTE), contrast and water enhanced multidetector CTE sensitivity for lesions up to 2cm is over 80% and specificity over 90% [9, 11]. The mass on CT was presumed to be a recurrence of the colon cancer and involvement of the surrounding organs was evident. Intravenous and oral contrast-enhanced CT was used.

Radical resection is the only potential curative procedure. DCP (duodenocephalic pancreaticoduodenectomy) is the method of choice for lesions in the first and second portion of the duodenum [6, 12]. We used the modified pylorus-preserving pancreaticoduodenectomy (PPPD). The perioperative mortality rate for radical resection is 1% and morbidity is around 50% [13, 14]. Pancreatic leakage is a common compli-

cation and consists of 16% of the curative resections group; our patient had this complication and was treated conservatively.

The survival rates for duodenal adenocarcinoma at 5 years are from 6–18% [12, 15]; in patients with curative resections they are 50% at 5 years [3, 13]. The prognostic factors of age, weight loss, nodal metastasis, positive resection margin and advanced tumour stage are associated with short survival [13]. Invasion of the pancreas is an important prognostic factor, T4 tumor stage patients have a shorter survival (median survival 11 months) compared with T1-T3 (median survival 29 months) [10, 16]. Postoperative morbidity is an additional prognostic factor, abdominal complications have a significant impact on median survival (180 months with an uneventful postoperative course and 52 months after abdominal complication) [17]. An additional prognostic factor can be cancer-directed therapy (surgery), patients who have had cancer-directed surgery (radical-curative surgery) have better overall survival [10, 15].

In conclusion, duodenal adenocarcinoma is a rare tumour that, due to its rarity and unrevealing symptoms, is diagnosed in its advanced stages. This accounts for the low rate of tumors amenable for resection. The case that we present was diagnosed in the advanced tumour stage mainly because the symptoms were obscured by the previous malignancy. Diagnosis, preoperative staging and treatment-planning are crucial and cancer-directed surgery (treatment) plays an important role in overall survival.

LITERATURE

1. Stanley W. Ashley. Chapter 27: Small intestine. In: F. Charles Brunicaudi (Editor). *Schwartz's Principles of surgery*. Eighth edition. McGraw-Hill; 2009.
2. Gore RM. Small bowel cancer. *Clinical and pathologic features*. *Radiol Clin North Am* 1997; 35: 351–60.
3. Solej M, D'Amico S, Brondino G, et al. Primary duodenal adenocarcinoma. *Tumori*. 2008; 94: 779–786.
4. Chapter 22. Tumors of the Small Intestine. In: Michael J. Zinner, Stanley W. Ashley (Eds). *Maingot's Abdominal Operations*. 11th Ed. The McGraw-Hill Companies; 2011.
5. Wheeler JMD, Warren BF, McC Mortensen NJ, et al. An insight into the genetic pathway of adenocarcinoma of the small intestine. *Gut*. 2002 February; 50(2): 218–223.
6. Sista F, De Santis G, Giuliani A et al. Adenocarcinoma of the third duodenal portion: Case report and review of literature. *World J Gastrointest Surg* 2012 January 27; 4(1): 23-26ISSN 1948-9366 (online) © 2012 Baishideng.
7. Neugut AI, Santos J. The association between cancers of the small and large bowel. *Cancer Epidemiol Biomarkers Prev*. 1993; 2: 551–3.
8. Wilson JM, Melvin DB, Gray GF, Thorbjarnarson B. Primary malignancies of the small bowel: a report of 96 cases and review of the literature. *Ann. Surg.* 1974 Aug; 180(2): 175–9.
9. *BMC Gastroenterology* | Full text | Duodenal carcinoma at the ligament of Treitz. A molecular and clinical perspective. [Internet]. [cited 2013 Apr 22]. Available from: <http://www.biomedcentral.com/1471-230X/10/109>
10. Adenocarcinoma of the small bowel – 4_Dabaja.pdf [Internet]. [cited 2013 Apr 22]. Available from: http://casesurgery.com/education/service/uhs/lenhart/smallBowel/4_Dabaja.pdf
11. Pilleul F, Penigaud M, Milot L, et al. Possible small-bowel neoplasms: contrast-enhanced and water-enhanced multidetector CT enteroclysis. *Radiology*. 2006 Dec; 241(3): 796–801.
12. Han S, Cheng J, Zhou H, et al. The surgical treatment and outcome for primary duodenal adenocarcinoma. *J Gastrointest Cancer*. 2009; 40(1–2): 33–7.
13. Bakaeen FG MM. What prognostic factors are important in duodenal adenocarcinoma? *Arch Surg*. 2000 Jun 1; 135(6): 635–42.
14. Kaklamanos IG, Bathe OF, Franceschi D, et al. Extent of resection in the management of duodenal adenocarcinoma. *Am. J. Surg*. 2000 Jan; 179(1): 37–41.
15. Chung WC, Paik CN, Jung SH, et al. Prognostic factors associated with survival in patients with primary duodenal adenocarcinoma. *Korean J. Intern. Med*. 2011 Mar; 26(1): 34–40.
16. Ohigashi H, Ishikawa O, Tamura S, et al. Pancreatic invasion as the prognostic indicator of duodenal adenocarcinoma treated by pancreatoduodenectomy plus extended lymphadenectomy. *Surgery*. 1998 Sep; 124(3): 510–5.
17. Malleo G, Tonsi A, Marchegiani G, et al. Postoperative morbidity is an additional prognostic factor after potentially curative pancreaticoduodenectomy for primary duodenal adenocarcinoma. *Langenbecks Arch Surg*. 2013 Feb 1; 398(2): 287–94.

Резиме

**МУЛТИВИСЦЕРАЛНА РЕСЕКЦИЈА
ЗАРАДИ НАПРЕДНАТ АДЕНОКАРЦИНОМ
НА ДУОДЕНУМ: ПРОКАЗ НА СЛУЧАЈ
И ПРЕГЛЕД ОД ЛИТЕРАТУРАТА**

**Александар Митевски¹, Светозар Антовиќ²,
Билјана Кузмановска³, Никола Јанкуловски²**

¹ Клиничка болница, Штип, Р. Македонија

² Универзитетска клиника за дигестивна
хирургија, Скопје, Р. Македонија

³ КАРИЛ (Клиника за анестезија, реанимација
и интензивно лекување), Скопје, Р. Македонија

Цел на оваа публикација е да се обработи аденокарциномот на дуоденумот преку презентација на случај и преглед на литературата, да се согледаат ставовите, дијагностичките можности и начинот на третман. Презентираме случај

на 42-годишен пациент со аденокарцином кој го зафаќа вториот дуоденален сегмент и ги инфилтрира околните органи. Пациентот има историја на претходен карцином на колон и е дијагностициран со туморската формација на дуоденумот на редовна контрола со компјутеризирана томографија. Направена е пилорус презервирачка панкреатикодуоденектомија за оваа T4 N2 M1 туморската формација.

Дуоденалниот аденокарцином е редок тумор и најчесто го зафаќа вториот дуоденален сегмент. Нема специфична клиничка презентација и затоа многу тешко се дијагностицира. Дијагнозата, прецизната локализација, зафаќањето на околните органи и ширењето во лимфните јазли има влијание на хируршката стратегија и прогноза.

Клучни зборови: дуоденум, дуоденален аденокарцином, втор сегмент на дуоденум, хирургија, пилорус презервирачка панкреатикодуоденектомија, ПППД.