

Adenocarcinoma of the duodenojejunal angle (The Angle of Treitz): Diagnostic and therapeutic difficulties: About 02 cases

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World Journal of Advanced Research and Reviews, 2024, 21(01), 2851–2856

Publication history: Received on 18 December 2023; revised on 27 January 2024; accepted on 30 January 2024

Article DOI: <https://doi.org/10.30574/wjarr.2024.21.1.0348>

Abstract

The adenocarcinoma of the Treitz angle is extremely rare. Its symptoms are not specific, hence its often late diagnosis. In addition, this anatomical location is difficult to access to standard endoscopy, so it is very difficult to obtain a biopsy. The surgical procedure for adenocarcinoma of the angle of Treitz remains controversial. It's hard to get a carcinological resection of this cancer.

We report two new cases of adenocarcinoma from the Treitz angle with a literature review.

Our objective is to discuss the clinical manifestations and circumstances of diagnosis, as well as the therapeutic modalities for adenocarcinomas of this location.

Keywords: Adenocarcinoma; Angle of Treitz; Duodenojejunal resection; Diagnosis

1. Introduction

Primary malignant tumors of the small intestine are rare tumors [1]. They represent 1 to 5% of all tumors of the digestive tract [1]. Adenocarcinomas of the small intestine represent less than 2% of digestive tumors [2]. Among these tumors, the duodenojejunal angle location (The angle of Treitz) is exceptional [3]. The most tumors of the angle of Treitz are gastrointestinal stromal tumors (GISTs), and only a few are adenocarcinomas [4]. Adenocarcinomas of the duodenojejunal angle are difficult to diagnose because of their rarity and nonspecific symptoms, difficulty to get a biopsy for anatomopathological study, and by the therapeutic difficulty concerning the choice of the type of surgical resection. It represent a unique challenge in terms of preoperative diagnosis, treatment decisions and postoperative management [5].

Aim: Report two new cases of adenocarcinoma of the angle of Treitz and discuss the diagnostic and therapeutic modality.

2. Cases report

2.1. Patient 01

51-year-old man, followed for diabetes for 3 years, and for anemia of unknown origin for a year. consulted for periumbilical pain with immediate postprandial vomiting. The patient reported a notion of asthenia with weight loss of 20 kg in 10 months (2.5/month). On clinical examination, the patient is pale, body mass index 24.7. Examination of the abdomen is normal apart from mucocutaneous pallor. The biological assessment found hemoglobin at 9.7 g/dl. Tumor

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markers ACE and Ca 19.9 were normal. Abdominal computed tomography (CT scan) showed a tumor of the 4th duodenum (Treitz angle), measuring 46/14 mm, with some mesenteric lymphadenopathy, vascular axes were free, absence of secondary locations. The Fibroscopy oeso-gastroduodenal (FOGD), was able to progress until the 4th duodenum, it found a tumor reducing the light of the angle of Treitz that was biopsy. Pathological study of biopsies found a well differentiated Lieberkuhnian adenocarcinoma. We operated on the patient by medial laparotomy above the umbilical. The intraoperative exploration found a tumor of the 4th duodenum, (duodeno-jejunal angle of Treitz) of about 06/05 cm, invading the left upper colic artery at its proximal part, with some upper mesenteric adenopathies. We performed carcinological segregation resection of the 4th duodenum at 05 cm upstream and downstream of the tumor, with superior mesenteric dissection, associated with a high monobloc left segmental colectomy. Restoration of digestive continuity by terminoterminal duodeno-jejunal anastomosis (between the 3rd duodenum and proximal jejunum), with terminoterminal colocolic anastomosis. The postoperative follow-up was simple, and the patient is discharged on the 7th postoperative day. The patient received postoperative chemotherapy. After a follow-up of 18 months, the patient is still alive and well, no recurrence has been recorded.

2.2. Patients 2

58-year-old man, with no medical history, followed for 3 months for anemia of unknown origin. He consulted for periumbilical pain, immediate postprandial vomiting, and melena. The patient reported a notion of asthenia, with a weight loss of 10.5 kg in 03 months (03.5 KG/month) body mass index (BMI) 21.86. Furthermore, it was noted that his mother died of colon adenocarcinoma. Physical examination of the patient revealed mucocutaneous pallor, palpation of an epigastric mass, approximately 10 cm in long axis, of firm consistency, and adhering to the deep plane. The gonglionic areas were free. The remainder of the examination was normal.

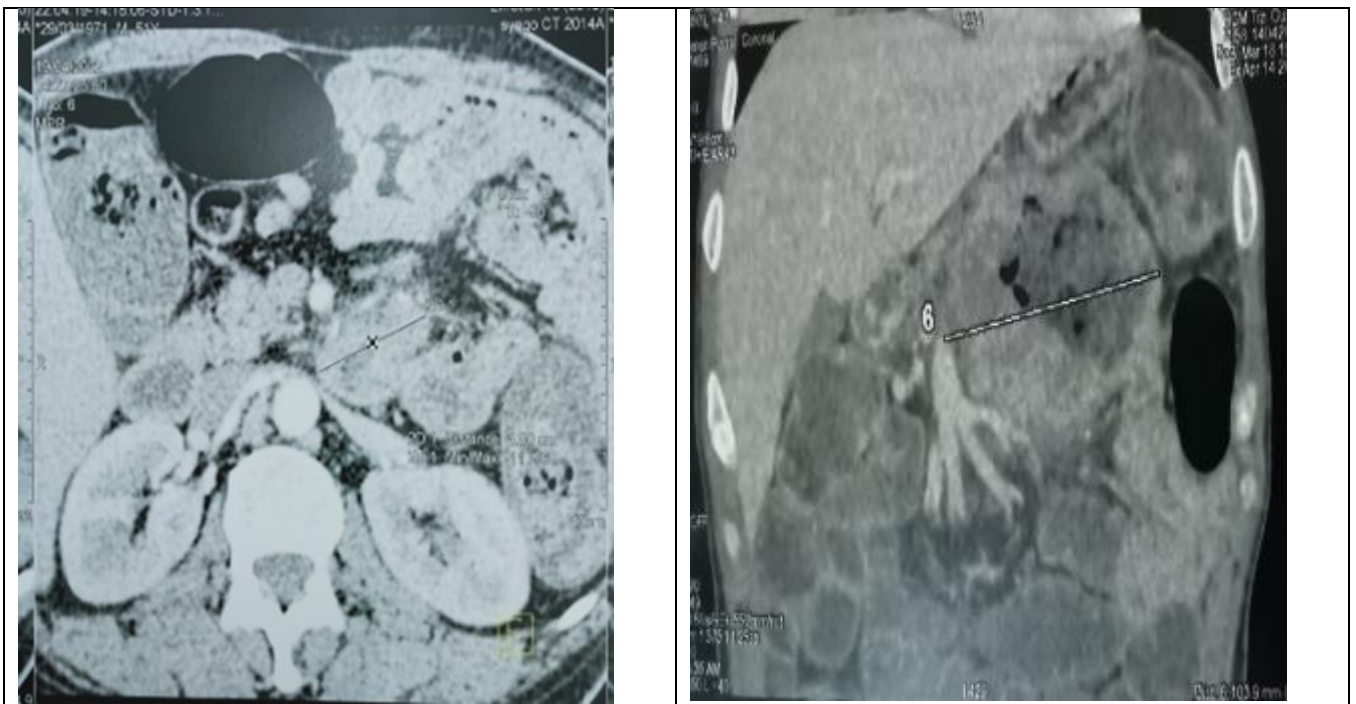


Figure 1 CT-Scan image of adenocarcinoma of angle of Treitz

Blood count, the hemoglobin (Hb) was 6.5 gr/dl, despite repeated blood transfusions every 48 hours. Abdominal CT and CT angiography showed a tumor of the 4th duodenum, measuring 14/10.4 cm, invading neighboring structures (body and tail of the pancreas, transverse mesocolon and the posterior surface of the stomach) with mesenteric lymphadenopathy, free vascular axes and absence of secondary locations. An ultrasound-guided transperietal biopsy was performed, the pathological study of which revealed a well-differentiated Lieberkuhnian adenocarcinoma. Given that the tumor was symptomatic (stenosing, and especially hemorrhagic, Hb still low despite repeated blood transfusions), the decision of the multidisciplinary consultation meeting (MCM) was to operate on the patient. After midline supraumbilical laparotomy. Intraoperative exploration found a large tumor of the duodenojejunal angle (Treitz angle) of approximately 15/12 cm, invading neighboring structures (body and tail of the pancreas, transverse mesocolon and the posterior surface of the stomach) with mesenteric lymphadenopathy. Procedure performed: clean partial resection (R2) of the tumor, removing the 3rd and 4th duodenum, with restoration of digestive continuity with end-to-end duodeno-jejunal anastomosis, between the 2nd duodenum and the jejunum, with lamellar drawing in

contact with the anastomosis. On the 5th postoperative day, an external digestive fistula appeared, which did not dry up despite resuscitation measures. The patient died on postoperative day 45.



Figure 2 Intraoperative macroscopic aspect of Treitz angle adenocarcinoma (Patient 1)

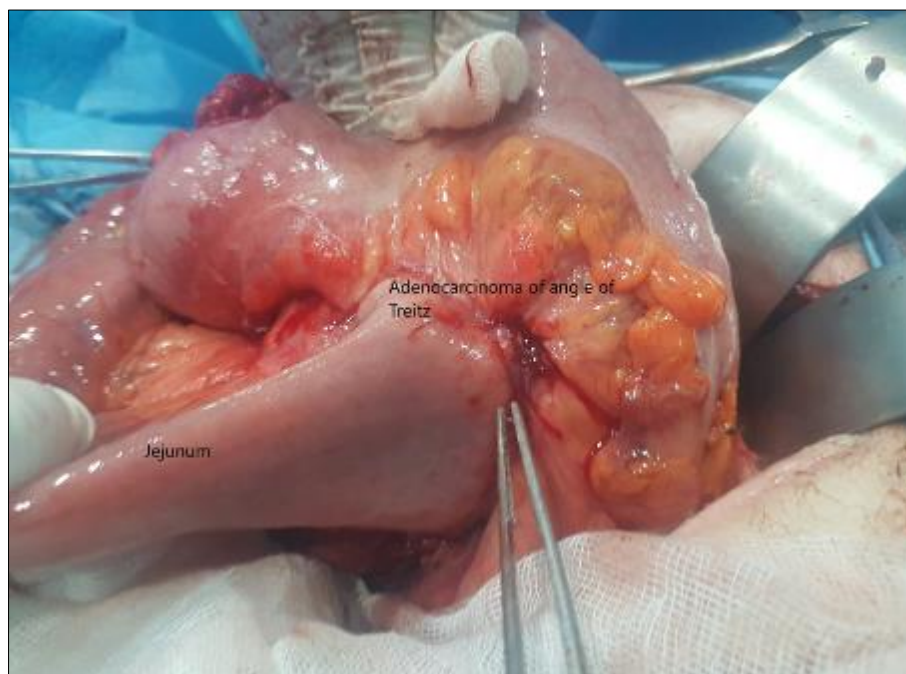


Figure 3 Intraoperative macroscopic aspect of Treitz angle adenocarcinoma (Patient 2)

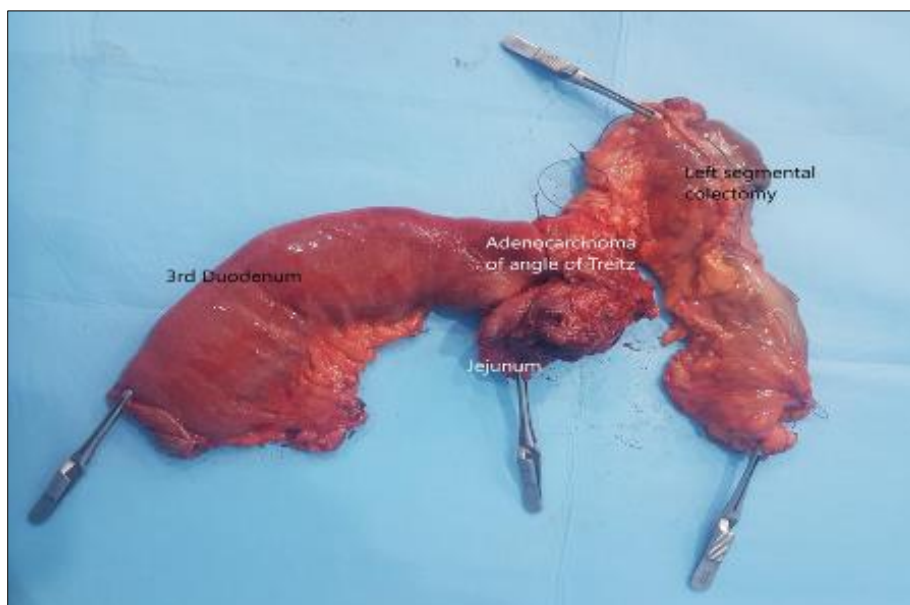


Figure 4 Duodenojejunal segmentectomy for adenocarcinoma of angle of Treitz

3. Discussion

True incidence of adenocarcinomas occurring at ligament of treitz is unknown, but duodenal adenocarcinomas constitute about 0.3 to 0.4 % of all gastrointestinal cancers [5]. Most tumors of the angle of Treitz are gastrointestinal stromal tumors (GISTs), adenocarcinomas are rare [4]. The extreme rarity and vagueness of presenting symptoms (Symptoms are often nonspecific (anemia, vague abdominal pain, dyspepsia) makes it hard to diagnose these tumors [3,5,6].

Adenocarcinomas usually present in the 6th and 7th decades [5,7], The mean age at presentation of these tumors is 67 years with higher prevalence in blacks than whites and men than women.3 The epidemiology of these tumors favors men to women at a rate ratio of 1.5:1.3 [6]. Our two patients are male, the adenocarcinoma was discovered in the 5th decade, respectively at 51 and 58 years old. The patients usually present with vague symptoms like intermittent pain due to partial intestinal obstruction, manifestations of upper gastrointestinal bleeding like melena or anaemic symptoms. Some may also present with anorexia and weight loss. However, the extreme rarity and vagueness of symptoms makes it difficult to diagnose these tumours at early stage [7]. A tumor of the angle of Treitz may also be an incidental finding during clinical examination [4]. In both patients, the symptoms were nonspecific, dominated by anemia at first, followed by periombilcal pain, vomiting, weight loss, and asthenia. This non-specific nature of the symptoms makes that the diagnosis is often late, moreover, in our second patient the tumor was palpable at the time of diagnosis. The localization at the angle of Treitz presents another diagnosis problem, which is the inaccessibility of the area by methods conventional endoscopy makes the diagnosis difficult [3,8,9]. barium meal radiography of the digestive tract is useful for detecting endoluminal diseases. However, the optimal examination method is capsule endoscopy or endoscopy using a tube capable of reaching the angle of Treitz [4].

Barium meal radiography of the digestive tract is useful for detecting endoluminal diseases [4], CT enteroclysis using spiral and multidetector-row CT with an enteral contrast agent has become the radiographic diagnostic tool of choice for suspected small bowel neoplasms because the sensitivity and specificity are 100% and 95%, respectively. gives useful information regarding the location and the anatomical relationships between the mass and the surrounding structures, including vascular infiltration and invasion of adjacent organs [4, 9]. However, Biopsy is accepted as gold standard for diagnosing gastrointestinal tumours and it could be useful to properly plan a surgical approach with radical intent [9]. Thus, However, the optimal examination method is capsule endoscopy or endoscopy using a tube capable of reaching the angle of Treitz [4]. Moreover, Enteroscopy by the “push” method using the pediatric colonoscope can yield a biopsy or a “sonde” enteroscopy can be used to view the lesion [5].

In our two patients, the preoperative diagnosis was obtained by biopsy using conventional endoscopy, which was able to progress to the 4th duodenum in the first patient. On the other hand, in the second patient, the tumor was palpable, we we performed a transparietal biopsy.

Treating adenocarcinomas of the angle of Treitz is another challenge. The problem that arises is how to perform a carcinological resection of this cancer with negative resection margins and a satisfactory lymph node dissection. The surgical procedure for adenocarcinoma of the angle of Treitz remains controversial. The particular vascularization of this area is technically challenging for surgeons [4]. Laparotomy remains the approach of choice for the treatment of Treitz angle tumors, the laparoscopic approach has been rarely described in the literature [9].

Both segmental resection and pancreaticoduodenectomy have been proposed [9]. Duodenojejunal segmentectomy is the treatment of choice for angle of treitz tumors with lymph node clearance, though lymph node positivity does not preclude resection [5, 10]. To increase the resection margin, the resection with anastomosis on the right side of the mesenteric vessels even if there is a risk of damaging the papilla [9]. Conversely, the segmental resection on the left side of the mesenteric vessels to protect the blood supply of the duodenal stump [9]. A resection margin of 05 cm is recommended, however, for some authors 02 cm of margin is sufficient [9]. An extended lymphadenectomy for adenocarcinoma is also recommended [9]

In our first patient, we performed a segmental duodenal resection to the left of the vessels, with resection margins of 05 cm on either side of the tumor, with an extended lymphadenectomy.

For our 2nd patient, the tumor was already locally advanced. we opted for primary surgery because the tumor was symptomatic (severe anemia requiring repeated blood transfusions every 48 hours, to maintain hemoglobin at 6.5 gr/dl). We performed a segmental resection, type R2, without lymphdenectomy, with an end-to-end duodeno-jejunal anastomosis.

The prognosis of these tumors is good [5]. Indeed, tumors of the 3rd and 4th duodenum have a better prognosis compared to tumors of the proximal duodenum.[9]. Early studies showed that the 5-year survival rate of patients with carcinomas confined to duodenal segments D3, D4, and the angle of Treitz was approximately 75%[4]. However, recent studies revealed a 5-year survival rate of only 23%-30%[4], which might be attributed to the different disease stages among the patients who underwent resection [4].

The factors influencing long-term survival include R1 or palliative resection, a locally advanced tumor, positive regional lymph nodes, poor response to adjuvant chemotherapy[4], other authors include tumor diameter, histological grade and serosal involvement [5].

In our case, the patient who had a locally advanced tumor, and whose surgical suite was enamelled with an anastomotic fistula died at one month after the surgery. In contrast, The 2nd patient who received a carcinological segmental resection, with simple operative follow-up, with postoperative chemotherapy, is still alive after 18 months of follow-up

4. Conclusion

The extreme rarity and vagueness of presenting symptoms makes it hard to diagnose these tumors. The difficulty in viewing this location and performing a biopsy on endoscopy, make diagnosing neoplasms at the angle of Treitz particularly difficult. There are no specific methods to diagnose these tumors in an early stage. Most of the cases require special investigations for diagnosis. The surgical procedure for adenocarcinoma of the angle of Treitz remains controversial. It's hard to get a carcinological resection of this cancer with negative resection margins and a satisfactory lymph node dissection for this location. Duodenojejunal segmentectomy is the treatment of choice for angle of treitz tumors with lymph node clearance, though lymph node positivity does not preclude resection.

Compliance with ethical standards

Disclosure of conflict of interest

The author declare that they have no conflicts of interest.

Statement of ethical approval

The data and files of patients presented in this manuscript are available at the Department of General Surgery of the University Hospital of Ain Taya.

Statement of informed consent

All patients consent to their inclusion in this work and the publication of the results.

Author Contributions

All authors contributed to this work

Funding

Funding will be provided by the lead author, with no funding from any other source.

Availability of Data and Materials

The data (Patient records, information sheets for each patient) are available and entered in Excel and Word formats

References

- [1] Abahssain Halima et al. Primary malignant tumours of the small intestine: Clinical and therapeutic aspects of 27 patients. *Pan African Medical Journal*. 2011; 8:18. [doi:10.11604/pamj.2011.8.18.517].
- [2] The National Digestive Cancer Thesaurus (TNCD) Chapter 13: Adenocarcinoma of the small intestine - 02/11/2022
- [3] M Konate, A Traore, B Karembe, Z Saye, A Bah, A Maiga et al. Tumeur de l'angle de Treitz au CHU Gabriel Toure. *Jaccr Africa* 2020; 4(2): 59-62.
- [4] Xie YB, Liu H, Cui L, Xing GS, Yang L, Sun YM, Bai XF, Zhao DB, Wang CF, Tian YT. Tumors of the angle of Treitz: a single-center experience. *World J Gastroenterol*. 2014 Apr 7; 20(13):3628-34. doi: 10.3748/wjg.v20.i13.3628. PMID: 24707147; PMCID: PMC3974531.
- [5] Koli P, Dewoolkar VV, Butale U. Adenocarcinoma at angle of treitz: a report of two cases with review of literature. *Indian J Cancer*. 2008 Oct-Dec; 45(4):179-81. doi: 10.4103/0019-509x.44669. PMID: 19112209.
- [6] Biello AR, Lin-Hurtubise KM, Condon FJ, Allen EJ. Duodenal Adenocarcinoma at the Ligament of Treitz: Management and Outcome. *Hawaii J Health Soc Welf*. 2019 Oct; 78(10):316-319. PMID: 31633113; PMCID: PMC6787396. 09x.44669. PMID: 19112209.
- [7] Thilakarathna B, et al. "Adenocarcinoma at the Ligament of Treitz-A Rare Presentation ". *Oncol Cancer Case Rep*, 2023, 9(2), 1-3
- [8] Dualim DM, Loo GH, Rajan R, Nik Mahmood NRK. Jejunal GIST: Hunting down an unusual cause of gastrointestinal bleed using double balloon enteroscopy. A case report. *Int J Surg Case Rep*. 2019; 60:303-306. doi: 10.1016/j.ijscr.2019.06.053. Epub 2019 Jun 27. PMID: 31277041; PMCID: PMC6609737.
- [9] Bracale U, Pontecorvi E, Silvestri V, Cuccurullo D, D'Ambra M, Lionetti R, Coppola A, Carannante F, Pirozzi F, Peltrini R, Sciuto A, Corcione F. Laparoscopic segmental resection for tumours of the Angle of Treitz: a challenging but feasible surgical option. Results from a retrospective case-series analysis. *Updates Surg*. 2021 Feb; 73(1):179-186. doi: 10.1007/s13304-020-00910-7. Epub 2020 Nov 4. PMID: 33146889; PMCID: PMC7889543.
- [10] Rose DM, Hochwald SN, Klimstra DS, Brennan MF. Primary duodenal adenocarcinoma: a ten-year experience with 79 patients. *J Am Coll Surg*. 1996 Aug; 183(2):89-96. PMID: 8696551.