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Perforated Giant Small Bowel Adenocarcinoma Presenting as Acute Generalized Peritonitis: A Case Report

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Abstract **Case Report**

Introduction: Small bowel adenocarcinoma is a rare malignancy, accounting for less than 5% of gastrointestinal cancers. Its nonspecific symptoms delay diagnosis, and it is often revealed by a complication. Presentation with tumor perforation and generalized peritonitis is uncommon. ***Case presentation:*** A 60-year-old man with a history of hypertension was admitted to the emergency department with a two-day history of bowel obstruction, with cessation of stool and gas, vomiting, diffuse abdominal pain and fever. He was tachycardic, and his distended abdomen showed guarding. Laboratory tests revealed leukocytosis and an elevated C-reactive protein. Abdominopelvic computed tomography showed a large small bowel mass with peritoneal effusion and free air. After resuscitation and antibiotic therapy, emergency laparotomy revealed a huge perforated small bowel tumor infiltrating its mesentery and invading adjacent loops, with enteric peritoneal fluid. An en bloc segmental resection was performed with margins of more than 5 cm and a triangular resection of the mesentery, followed by a side-to-side small bowel anastomosis, peritoneal lavage and drainage. The postoperative course was uneventful and the patient was discharged on postoperative day 6. Histopathology showed a small bowel adenocarcinoma with tumor-free proximal and distal margins and several metastatic lymph nodes. The patient was referred for adjuvant chemotherapy and was doing well at one month. ***Conclusion:*** Small bowel adenocarcinoma may present as a surgical emergency. Oncological en bloc resection remains feasible in this setting.

Keywords: Small bowel adenocarcinoma; Small intestine neoplasm; Intestinal perforation; Peritonitis; Bowel obstruction; Case report.

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1. INTRODUCTION

Although the small bowel represents most of the length and mucosal surface of the gastrointestinal tract, primary small bowel cancers are rare, accounting for less than 5% of gastrointestinal malignancies [1–3]. Adenocarcinoma, neuroendocrine tumors, lymphomas and gastrointestinal stromal tumors are the main histological types, and neuroendocrine tumors have now overtaken adenocarcinoma as the most frequent type in the United States [2]. Small bowel adenocarcinoma arises mostly in the duodenum, then in the jejunum and the ileum [1,4]. Recognized risk factors include Crohn's disease, celiac disease, familial adenomatous polyposis, Lynch syndrome and Peutz-Jeghers syndrome [1].

Because its symptoms are vague and the small bowel is difficult to explore, small bowel adenocarcinoma is often diagnosed late, at an advanced stage, or when a complication occurs, mainly obstruction or bleeding [1,4]. Perforation with generalized peritonitis is an uncommon mode of presentation that requires emergency surgery and raises the question of how to combine damage control with oncological principles.

We report the case of a giant perforated small bowel adenocarcinoma revealed by acute peritonitis and managed by emergency oncological resection. This case is reported in line with the CARE guidelines [8].

2. CASE PRESENTATION

2.1. Patient information

A 60-year-old man with a history of arterial hypertension was admitted to the emergency department with a two-day history of bowel obstruction, with cessation of stool and gas, vomiting and diffuse abdominal pain, associated with fever.

2.2. Clinical findings

On examination, the patient was tachycardic. The abdomen was distended, with abdominal guarding.

2.3. Diagnostic assessment

Laboratory tests showed leukocytosis and an elevated C-reactive protein level. Abdominopelvic computed tomography showed a large mass arising from the small bowel, associated with peritoneal effusion and free intraperitoneal air bubbles, consistent with a perforated small bowel tumor complicated by peritonitis.

2.4. Therapeutic intervention

Resuscitation measures were initiated together with broad-spectrum intravenous antibiotics, and the patient was taken to the operating room. Exploration revealed a huge perforated small bowel tumor (Figure 1), infiltrating the mesentery of the involved segment and invading a few adjacent small bowel loops (Figure 2), with peritoneal effusion of digestive fluid.



Figure 1: Intraoperative view showing a huge small bowel tumor with a wide perforation covered by digestive fluid



Figure 2: Intraoperative view of the tumor mass infiltrating its mesentery, with adjacent small bowel loops adherent to and invaded by the tumor

An en bloc segmental resection of the involved small bowel and adjacent invaded loops was performed, respecting safety margins of more than 5 cm, together with a triangular (wedge) resection of the corresponding mesentery to include the regional lymph nodes (Figure 3). Digestive continuity was restored by a side-to-side small bowel anastomosis. The procedure was completed by abundant peritoneal lavage and drainage.



Figure 3: Resected specimen showing the perforated tumor with the involved small bowel segment and its mesentery (scalpel for scale)

2.5. Follow-up and outcomes

The postoperative course was uneventful, with good clinical and biological improvement, and the patient was discharged on postoperative day 6. Histopathological examination concluded to a small bowel adenocarcinoma, with tumor-free proximal and distal margins and several metastatic lymph nodes. The patient was referred to the oncology department to start adjuvant chemotherapy. At the last follow-up visit, one month after surgery, he was in good general condition.

3. DISCUSSION

Small bowel adenocarcinoma is rare, with an incidence below one case per 100,000 inhabitants per year in Western countries, and mainly affects patients in their sixth and seventh decades, with a slight male predominance [1,3]. Our patient, a 60-year-old man, fits this profile. In the prospective French ARCAD-NADEGE cohort of 347 patients, the tumor was located in the duodenum in 60.6% of cases, the jejunum in 20.7% and the ileum in 18.7%; 35.6% of patients were metastatic at diagnosis [4].

The diagnosis is frequently delayed because early symptoms, such as intermittent abdominal pain, nausea, weight loss or occult bleeding, are nonspecific, and because conventional endoscopy does not reach the jejunum and ileum [1]. Many tumors are therefore revealed by a complication. Obstruction is the most common, related to the annular, stenosing growth of the tumor, followed by gastrointestinal bleeding; perforation is rarer and is classically associated with lymphomas rather than adenocarcinomas [1]. Our patient presented with both obstruction and perforation with generalized peritonitis, an unusual and severe presentation.

Computed tomography is the key examination in the emergency setting. It shows a wall thickening or a mass of the small bowel, signs of obstruction, and complications such as peritoneal effusion and pneumoperitoneum, and allows assessment of locoregional extension and distant metastases [1,5]. In the elective setting, small bowel exploration by CT or MR enterography, capsule endoscopy or device-assisted enteroscopy allows a preoperative histological diagnosis, which is not possible in an emergency such as ours [1,5].

Surgical resection is the only curative treatment of localized small bowel adenocarcinoma. For jejunal and ileal tumors, recommendations are a segmental resection with free margins and a regional lymphadenectomy including the mesentery up to the origin of the feeding vessels, in order to remove the regional lymph nodes and stage the disease accurately [5,6]. In the setting of perforation and peritonitis, the priority is to control the source of sepsis; however, when the patient's condition allows it, an oncological en bloc resection, including adjacent invaded structures, should be performed [5]. In our patient, resuscitation and antibiotics allowed a one-stage procedure combining an

en bloc resection with margins of more than 5 cm, a triangular mesenteric resection, primary anastomosis, lavage and drainage, with an uneventful recovery.

Prognosis depends mainly on stage. In the ARCAD-NADEGE cohort, 5-year overall survival was 87.9% for stage I, 78.2% for stage II and 55.5% for stage III, while the median overall survival of stage IV disease was 12.7 months [4]. Our patient had node-positive disease, and the tumor perforation and invasion of adjacent loops represent features of locally advanced disease. Although no randomized trial has yet demonstrated the benefit of adjuvant chemotherapy, French and NCCN guidelines recommend oxaliplatin-based adjuvant chemotherapy, extrapolated from colon cancer, for node-positive tumors, and discuss it for high-risk stage II tumors [5,6]. In the ARCAD-NADEGE cohort, 61.5% of patients with resected tumors received adjuvant chemotherapy, mostly oxaliplatin-based [4]. The ongoing international BALLAD trial is evaluating the benefit of adjuvant chemotherapy in this disease [7]. Our patient was therefore referred for adjuvant chemotherapy.

4. CONCLUSION

Small bowel adenocarcinoma is a rare tumor whose diagnosis is often delayed until a complication occurs. Perforation with generalized peritonitis is an exceptional and severe mode of revelation. Prompt resuscitation followed by emergency surgery allows, when the patient's condition permits, an oncological en bloc resection with free margins and mesenteric lymphadenectomy. Adjuvant chemotherapy should be discussed in a multidisciplinary meeting for node-positive or locally advanced disease.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Written informed consent was obtained from the patient for the publication of this case report and the accompanying images.

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