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Case Report

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Small Bowel Adenocarcinoma: Diagnostic Challenges and Therapeutic Dilemmas

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ABSTRACT

Introduction: Small bowel adenocarcinoma is a rare malignancy, accounting for only 0.6% of all malignant tumors and 3% of gastrointestinal malignancies. Due to its low incidence, nonspecific symptoms, and diagnostic challenges, small bowel cancer is often diagnosed at advanced stages, presenting a significant challenge in clinical practice.

Case Presentation: We present the case of a 78-year-old woman diagnosed with small bowel adenocarcinoma localized in the ileum, who presented with intestinal obstruction and peritoneal carcinomatosis. Imaging studies and immunohistochemistry confirmed the diagnosis. The patient was initially treated with XELOX-based chemotherapy, followed by FOLFIRI due to disease progression. Despite intensive therapeutic management, the disease showed resistance, highlighting the need for an individualized approach in these rare cases.

Conclusion: This case underscores the diagnostic and therapeutic challenges associated with small bowel adenocarcinoma. Given the limited therapeutic evidence, treatment strategies are often extrapolated from colon cancer management. Prospective studies are needed to improve the management of this pathology.

Keywords: Case Report, Small Bowel Adenocarcinoma, Intestinal Obstruction, Chemotherapy, Metastasis

Introduction

Small bowel cancer accounts for only 0.6% of all malignant tumors and 3% of all gastrointestinal malignancies [1].

Adenocarcinoma is the most common histological type of small bowel cancer, comprising 30% to 50% of these tumors. Carcinoid tumors are the second most frequent, representing 20% to 30% of cases, while stromal tumors and lymphomas each constitute approximately 15% of small bowel cancers [2].

The 5-year survival rate is 70.2%, varying depending on the stage at diagnosis, with 84.8% for localized stages, decreasing to nearly half in advanced stages [3].

Given the rarity of cases, available data regarding the natural history of the disease and beneficial treatments are scarce, making it a challenge in daily clinical practice. This report presents the case of a patient with small bowel adenocarcinoma, initially diagnosed with intestinal obstruction and peritoneal carcinomatosis. The patient underwent first- and second-line chemotherapy treatments.

Case Presentation

A 78-year-old female patient, with no significant medical history, presented multiple times with epigastric pain, associated with anorexia and a weight loss of 20 kg over the past 3 months. She was evaluated by a gastroenterologist, who requested upper and lower gastrointestinal endoscopies. The esophagogastroduodenoscopy revealed duodenogastric reflux, while the colonoscopy could not be completed due to the presence of abundant colonic material. Ten days after these studies, the patient experienced an increase in epigastric pain, along with progressive abdominal distension and cessation of bowel movements. An urgent abdominal and pelvic CT scan was requested to rule out intestinal obstruction. The CT scan showed dilation of the distal ileum up to 4.5 cm,

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with a change in caliber at the level of the ileocecal valve and a concentric, hyperdense mural lesion measuring 8 mm in thickness, suggestive of a primary tumor. Additionally, a solid right adnexal mass measuring 4 x 3 cm was observed in the pelvis.

Given the suspicion of intestinal obstruction, a right hemicolectomy and right adnexectomy were performed, along with lymphadenectomy. The intraoperative findings confirmed a tumor at the ileocecal valve, right adnexal mass, and peritoneal carcinomatosis.

Pathological examination of the resected specimens revealed a multicentric mucinous adenocarcinoma of the small intestine with two foci measuring 35x30x10 mm and 25x20x6 mm, along with cecal appendix involvement. All three lesions involved the full thickness of the bowel wall. The right adnexa (fallopian tube and ovary) were metastatic. Twenty resected lymph nodes showed no evidence of neoplastic involvement. The final staging was pT(m)3 N0 M1.

Immunohistochemical staining was performed on an ovarian tumor block with the following results: CK7: negative, CK20: positive, Pax 8: negative, CDX-2: strongly positive nuclear staining. In summary, the immunohistochemical profile is consistent with ovarian metastasis of a mucinous adenocarcinoma of gastrointestinal origin.

Immunohistochemical testing for mismatch repair (MMR) proteins was conducted on the lesion obtained from the hemicolectomy, yielding the following results:

MLH1: intact nuclear expression
MSH2: intact nuclear expression
MSH6: intact nuclear expression
PMS2: intact nuclear expression
No loss of nuclear expression of MMR proteins was observed, indicating a low probability of high microsatellite instability (MSI-H).

A post-surgery CT scan of the chest, abdomen, and pelvis was requested, which showed thin loop mechanical suture clips, altered perilesional fat density, and small nodules approximately 7 mm in size at that level. CEA and CA 19.9 levels were normal.

Systemic treatment with XELOX was initiated. During oncology follow-ups, the patient reported symptoms of grade 3 peripheral neuropathy. Persistent grade 2 neutropenia and thrombocytopenia were observed, requiring a reduction in chemotherapy dosage.

Control studies after the fifth cycle of chemotherapy showed imaging progression. A chest CT scan revealed an increase in the number of subcentimetric right hilar and low paratracheal mediastinal lymph nodes.

An MRI of the abdomen and pelvis showed ascites in the pelvic peritoneal recesses, with focal nodular thickening in the pouch of Douglas. Pathological signal alteration and thickening of the upper rectal wall, extending approximately 9 cm from the anal margin and encompassing the anterior hemicircumference over a length of about 5 cm, were also observed.

The patient was evaluated by the surgical team, who ruled out rectal lesion resection, suggesting that it was secondary to her small bowel adenocarcinoma.

Given the lesion progression, it was decided to switch the chemotherapy regimen to FOLFIRI.

Discussion

We present the case of a patient with a postoperative diagnosis of small bowel adenocarcinoma, located in the ileum, which progressed to an obstructive syndrome.

Regarding the clinical presentation, the symptoms of small bowel adenocarcinoma are nonspecific. In a study conducted at a single institution with 491 cases of this type of cancer, abdominal pain was reported in 43% of patients, nausea and vomiting in 16%, anemia in 15%, and less than 9% were asymptomatic. This is consistent with our case, where the patient had presented multiple times with nonspecific digestive tract symptoms [4].

This lack of specific symptoms, combined with the limitations of endoscopic detection, often leads to late identification of these tumors, as in our case, where the disease clinically manifested as an intestinal obstruction [5,6].

Although several risk factors and premalignant conditions, such as Crohn's disease, celiac disease, and hereditary polyposis, are associated with an increased risk of developing small bowel adenocarcinoma, none of these were present in our patient. It is also important to note that she was neither a smoker nor obese, nor did she have a family history of carcinoma [7-9].

While the patient had the most common histological subtype, the localization in the ileum is less common. In this region, lymphomas are more frequent, although they are typically associated with bulky masses and lymphadenopathy. Neuroendocrine tumors, which account for two-thirds of ileal neoplasms, present with carcinoid syndrome in only 20% of cases, secondary to the release of tumor hormones. On the other hand, gastrointestinal stromal tumors (GISTs) are predominantly found in the duodenum, with up to 50% of cases located there, and they are mostly asymptomatic [5,10,11].

In terms of imaging diagnosis, small bowel adenocarcinomas typically present with concentric thickening of the bowel wall accompanied by stenosis. Additionally, metastases to lymph nodes, liver, peritoneum, or ovaries may be observed. These characteristics align with the case presented, facilitating a diagnostic approach. It is important to highlight that other entities exhibit differential characteristics: lymphoma may present as a bulky mass with lymphadenopathy and multiple metastases; GISTs generally appear as large exophytic masses, often with areas of necrosis; and neuroendocrine tumors are characterized by hypervascular submucosal masses with ileal mesenteric invasion [12,13].

Small bowel obstruction is a common surgical emergency in daily clinical practice; however, it is rarely caused by stenosis secondary to an adenocarcinoma, as was the case here [5,11].

Delayed diagnosis at advanced stages contributes to a poorer prognosis, which directs oncospecific treatment towards a palliative approach. In these cases, chemotherapy is the preferred treatment, as it has been shown to improve overall survival compared to exclusive palliative care aimed solely at symptom relief [11,14].

To describe the tumor's molecular profile and plan systemic treatment, an immunohistochemical analysis was performed to identify microsatellite instability (MSI). The result indicated a low probability of MSI-H, which excludes the patient as a candidate for pembrolizumab treatment, according to the data from the KEYNOTE-158 study [15].

Although there are no clear recommendations for the optimal treatment of small bowel cancer, the combination of fluoropyrimidine and oxaliplatin (FOLFOX or XELOX) remains the most widely used and effective first-line chemotherapy, with manageable toxicities [16,17].

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In the presented case, the patient received XELOX with regular tolerance, experiencing the expected adverse effects. Maintaining the quality of life and well-being of oncology patients with disseminated disease, where the treatment goal is palliative, must be a primary consideration when making decisions about oncospecific therapies. Oxaliplatin-induced polyneuropathy and capecitabine-associated hand-foot syndrome are the most common adverse effects, which, depending on their severity, can limit patients' daily activities.

It is known that patients with metastatic colon cancer benefit from successive lines of chemotherapy until disease progression, with different treatment regimens that may include maintenance phases with lower-intensity chemotherapy and/or treatment-free intervals. Therefore, continuous follow-up with imaging studies and tumor markers is important to assess the response to different treatments and identify the point of lesion progression, allowing for adjustments in therapeutic strategy [18,19]. Although these studies do not include patients with small bowel carcinoma, it is possible to extrapolate the results. As a second-line treatment, FOLFIRI was administered, and although there is limited data demonstrating its benefit in this context, available studies indicate a response rate of 20% and a disease control rate of 50% [20].

Among the various therapeutic strategies for small bowel adenocarcinoma is metastasis resection, which has shown benefits in overall survival (OS) in several trials. However, this option is limited to highly selected patients, generally those with a single metastatic site. This strategy differs from that employed in other types of gastrointestinal cancers, such as colorectal cancer, where hepatic metastasis resection has become a standard treatment, with 5-year survival rates ranging from 25% to 40% [21].

Conclusion

Small bowel adenocarcinoma is a type of cancer that, due to diagnostic challenges, is often not detected until the disease is in an advanced stage. This case illustrates the diagnostic difficulties and therapeutic challenges associated with this pathology. The available evidence on specific therapeutic strategies for this disease is limited, leading to clinical decisions being based on studies of colon cancer due to their similarity. There is a clear need for more prospective studies that specifically focus on small bowel adenocarcinoma.

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