RMMG
Revista Médica de Minas Gerais

CASE REPORT

Small bowel obstruction secondary to ileal adenocarcinoma: a rare condition

Obstrução do intestino delgado secundária a adenocarcinoma ileal: uma condição rara

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ABSTRACT

Introduction: Small bowel neoplasms account for 3% of cancers of the digestive tract, with 40% of cases corresponding to adenocarcinomas. The clinical presentation is nonspecific and the symptoms typically manifest in advanced stages hindering early diagnosis. This article aims to a rare case of acute obstructive abdomen secondary to ileal adenocarcinoma. **Methods:** A review of the patient's medical records and a literature review were conducted, correlating literature findings with the presented case. **Case Report:** A 71-year-old male patient was admitted with abdominal pain, constipation and failure to pass flatus, with acute obstructive abdomen. Abdominal computed tomography revealed distal ileal obstruction with moderate proximal bowel loop dilation; the patientwas referred for surgery. Exploratory laparotomy revealed a tumor in the distal ileum, mesenteric lymphadenopathy, and nodules in the spleen, liver, and gallbladder suggestive of metastases; an enterectomy with tumor mass excision was performed. Immunohistochemistry demonstrated an intestinal-type adenocarcinoma, with the gastrointestinal tract as the probable site of origin. Following evaluation by the oncology team, the patient began palliative chemotherapy but passed away two months after admission. **Conclusion:** This case highlights the importance of recognizing, understanding the clinical presentation of, and diagnosing small bowel neoplasms. As these are uncommon and difficult-to-diagnose pathologies, a high index of suspicion is required to avoid delayed detection.

Keywords: Intestinal obstruction; Adenocarcinoma; Small bowel; Bowel cancer; Case report.

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Supporting sources:

None.

Conflicts of interest:

None.

RESUMO

Introdução: As neoplasias de intestino delgado representam 3% dos cânceres do tubo digestivo, das quais 40% correspondem a adenocarcinomas. A apresentação clínica é inespecífica e os sintomas manifestam-se em doenças mais avançadas, dificultando o diagnóstico precoce. Este artigo tem como objetivo relatar a ocorrência de um caso raro de abdome agudo obstrutivo secundário a um adenocarcinoma de íleo. **Métodos:** Realizada revisão de prontuário do paciente e revisão bibliográfica sobre o tema, correlacionando os achados da literatura com o caso apresentado. **Relato de Caso:** Paciente masculino, 71 anos, internado com dor abdominal, constipação e ausência de eliminação de flatos, com quadro de abdome agudo obstrutivo. A tomografia computadorizada de abdome evidenciou obstrução intestinal do íleo distal com moderada dilatação de alças entéricas a montante, sendo encaminhado para cirurgia. Na laparotomia exploradora, foi evidenciada uma tumoração no íleo distal, linfonodomegalias mesentéricas e nódulos em baço, fígado e vesícula biliar sugestivos de metástases, realizando-se enterectomia com exérese da massa tumoral. A imuno-histoquímica demonstrou adenocarcinoma de padrão intestinal, com o trato gastrointestinal como o provável sítio de origem. Após a avaliação da equipe de oncologia, paciente iniciou tratamento quimioterápico paliativo, evoluindo com óbito após dois meses da internação. **Conclusão:** Ressalta-se, nesse caso, a importância do reconhecimento precoce do quadro clínico das neoplasias de intestino delgado, uma vez que são patologias incomuns e de difícil diagnóstico, sendo necessária alta suspeição para evitar sua detecção tardia.

Palavras-chave: Obstrução intestinal; Adenocarcinoma; Intestino delgado; Câncer de intestino; Relato de caso.

Ethic Committee:
Certificate of presentation and ethical appreciation (CAAE): 89525125.6.0000.8667.

Received on: July 10, 2025.
Approved on: May 25, 2026.
Publication Date: October 23, 2026.

DOI: 10.5935/2238-3182.2026e36412-en

Introduction

Neoplasms of the small intestine are relatively rare, accounting for approximately 3% of cancers of the digestive tube[1]. They can be subdivided into carcinoid tumors, lymphomas, sarcomas and adenocarcinomas, with these representing 33% of cases[2]. They do not have a completely established pathogenesis and their low incidence is probably correlated with the presence of circulating liquid content, a smaller bacterial microbiota and the relatively rapid transit of the contents through its lumen, which decreases exposure to carcinogens[3]. Its clinical presentation is nonspecific, so that the symptoms are usually present in more advanced stages and include abdominal pain, anorexia, gastrointestinal bleeding, weight loss, and even small bowel obstruction[4,5]. Its diagnosis is often challenging, so that endoscopic and radiological examinations should be indicated according to the patient's symptomatology and the probable location of the tumor[1], and its prior knowledge is essential to increase its early suspicion and avoid a late diagnosis with a worse prognosis. This publication aims to present the clinical case of a 71-year-old male patient diagnosed with an ileal tumor and to conduct a literature review on small bowel tumors.

Case Report

A 71-year-old male patient, previously a smoker and drinker, was admitted to the emergency unit with acute abdomen, periumbilical pain, constipation and absence of elimination of flatus. On physical examination, he presented abdominal pain on superficial and deep palpation, in addition to bulging with a palpable mass in the mesogastrium and right flank. He was in previous outpatient follow-up due to abdominal pain with intermittent colic associated with change in bowel habit started 4 months after admission, in addition to indigestion, hyporexia and weight loss of 5 kg. He had previously sought emergency unit 6 times, being performed repeated intestinal lavages, but

without diagnosis after medical evaluations or resolution of the condition. Laboratory tests were performed, and normocytic and normochromic anemia (hemoglobin 12.6 g/dl) and increased C-reactive protein were observed. Computed tomography of the abdomen was performed in the emergency room (Figure 1) and showed intestinal obstruction of the distal ileum with moderate dilatation of upstream enteric loops.

The patient was referred for exploratory laparotomy surgery, which identified tumors in the distal ileum, mesenteric lymph nodes, and nodules in the spleen, liver, and gallbladder suggestive of metastases. Considering the findings, an enterectomy was performed with excision of the tumor mass starting from the distal ileum, approximately 240 cm from the angle of Treitz, and a side-to-side ileocolic anastomosis using the Barcelona technique, preserving the ileocecal valve. The patient was discharged from the hospital five days after the surgical procedure due to clinical improvement, with elimination of feces and flatus and good acceptance of the light diet, with a fast scheduled outpatient follow-up.

In the anatomopathological examination, segment of the small intestine measuring 106cm showed dilation secondary to stenosis, with wall thickening due to infiltration by a gland-forming neoplasm, consistent with adenocarcinoma (Figure 2A). Immunohistochemistry demonstrated positivity for cytokeratin (34BE12), CDX2 (Figure 2B), vilin (Figure 2C) and SATB2 in neoplastic cells, supporting the diagnosis of intestinal adenocarcinoma. On chest computed tomography, nodules suggestive of metastases were observed. The patient was evaluated by the oncology team that decided to initiate palliative chemotherapy treatment with oral administration with capecitabine, however, the patient evolved with death after two months.

In complementary examinations carried out one month before admission, during the investigation of alteration of the intestinal habit and ponderal loss, a CA 19-9 >12,000 U/ml, carcinoembryonic antigen (CEA): 6.8 ng/ml. A preliminary investigation was conducted with colonoscopy, which revealed only colonic diverticulosis. The abdominal MRI with contrast enhancement, showed a nodular lesion in the liver and spleen and slight focal dilation of the main pancreatic

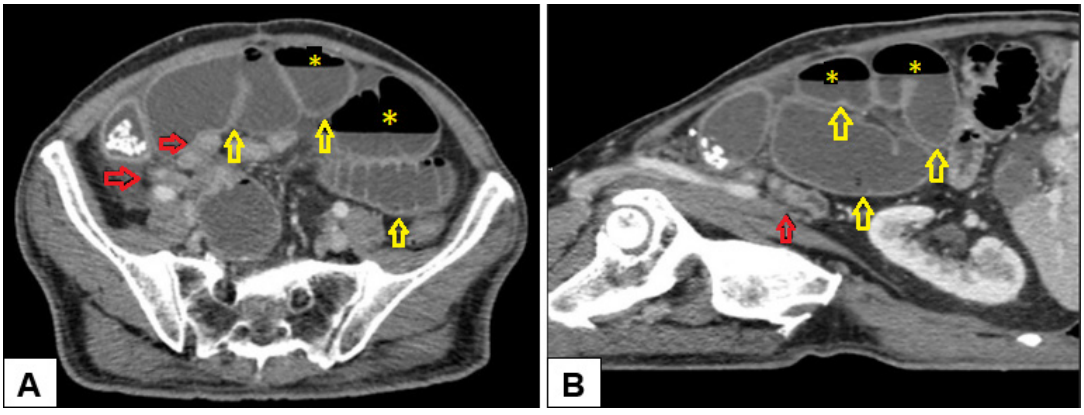

Figure 1. Abdominal computed tomography.

Caption: Abdominal tomography performed in the hospital. In image A, cross section, For Review Only and in image B, sagittal section, intestinal obstruction of the distal ileum (red arrows) is observed associated with moderate dilatation of upstream enteric loops (yellow arrows) and the presence of hydroaerial levels (asterisk).

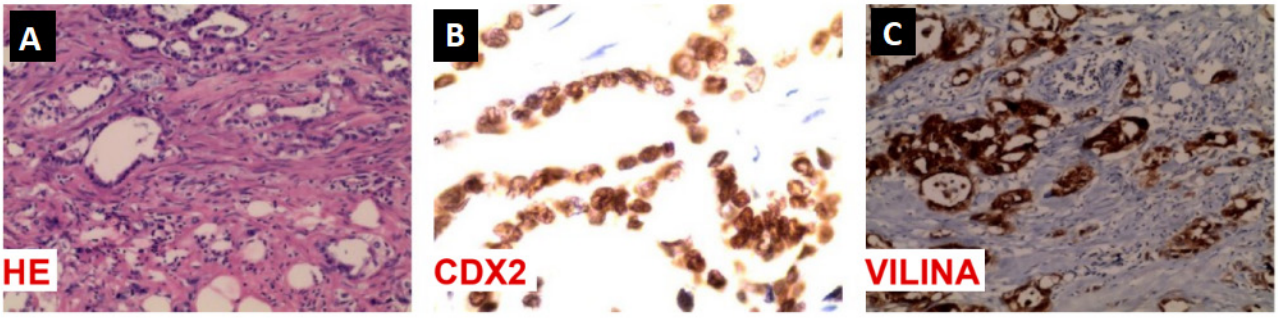

Figure 2. Anatomopathological examination.

Caption: Hematoxylin-Eosin (HE) staining of the tumor lesion of the ileum showing adenocarcinoma infiltrating mucosa, wall and serosa of the small intestine (Photo A). Immunohistochemical study reveals expression for cytokeratin (34BE12), CDX2 (Photo B), vilin (Photo C) and SATB2. The findings correspond to adenocarcinoma of intestinal pattern with gastrointestinal tract being the most likely site of origin.

duct. The possibility of a biopsy was being discussed during the outpatient follow-up; however, the patient ended up being hospitalized before the condition could be clarified due to the complication of an acute abdomen. The diagnosis of an ileal tumor was made after exploratory laparotomy and with the immunohistochemical results of the lesion.

Discussion

The small bowel represents about 80% of the anatomical length and 90% of the absorptive surface area of the gastrointestinal tract, being subdivided into duodenum, jejunum and ileum[2,6]. Despite being responsible for less than 5% of malignancies of the gastrointestinal tract[7], its incidence has been increasing in developed countries, with the number of cases having doubled in the last forty years[8]. Its low incidence may be justified by the shorter intestinal transit time, which limits its exposure to food carcinogens, as well as by the lower microbiota density, resulting in the lower conversion of bile salts into carcinogens, such as deoxycholic acid[1,9].

Malignant neoplasms of the small intestine can be subdivided into four histological types: adenocarcinomas, carcinoid tumors, lymphomas and sarcomas. Small bowel adenocarcinoma (SBA) represent approximately 33% of cases and are predominantly located in the duodenum (55-82%), followed by the jejunum (11-25%) and ileum (7-17%), most of which are located in the ampulla of Vater[10]. Thus, although SBA is not a significant public health concern, its increasing incidence requires more attention and efforts to improve the diagnosis and treatment of this rare pathology[6,11].

The average age of SBA diagnosis is around 60 years, with more than 85% of patients being over 50 years of age and has a relatively higher incidence among men (relative risk: 2.6 for men and 2.0 for women)[12]. The number of African Americans affected is about twice that of Caucasians, with most patients being diagnosed between the 5th and 7th decade of life[13]. In most patients, the diagnosis is made after the onset of symptoms, especially in the advanced stages, which occur due to its location, as well as the absence of adequate screening protocols, even for high-risk individuals[2,14].

The pathogenesis of SBA is not completely elucidated, but studies suggest that it occurs from the phenotypic transformation of adenoma to adenocarcinoma[1,3,6]. In contrast to colorectal cancer (CRC), studies that clarify its pathophysiology are rare, which may be justified by the rarity of the disease. Despite this, there is evidence that suggests similarities in SBA carcinogenesis with CRC, such as the presence of mutations in the p53, β-catenin and APC genes[15]. In addition, the rate of KRAS mutation in SBA is comparable to that observed in CRC (40-60%), while BRAF mutations are infrequent[11,16].

Environmental and lifestyle risk factors are difficult to define due to the low incidence of the disease, but despite conflicting studies, a systematic review suggested that alcohol intake and smoking are associated with a higher risk of SBA[17], as well as the high consumption of refined carbohydrates, red meat and smoked foods, while the higher intake of coffee and vegetables seems to be protective factor[17,18]. Hereditary syndromes as Lynch syndrome, familial adenomatous polyposis (FAP) and Peutz-Jeghers syndrome (PJS), as well as conditions associated with increased local inflammation, such as celiac disease and Crohn's disease, were also identified risk factors[19].

The diagnosis of SBA is challenging, since patients usually have initially nonspecific symptoms, which results in delayed diagnosis[20]. The clinical presentation can range from nausea, vomiting, weight loss, gastrointestinal bleeding to intestinal stenosis, with colicky and intermittent abdominal pain being the most common symptom[21]. A relevant fact is that almost two thirds of patients have as clinical manifestation acute perforative or obstructive abdomen and about 50% already have advanced disease at the time they develop symptoms[11]. In a study group conducted with 129 patients diagnosed with small bowel cancer, a palpable mass was found in 28% of participants[22].

Several imaging exams are available for the evaluation of small bowel neoplasms, however, there is no consensus on the best strategy to be used, which may vary according to its location[2]. In the NADEGE cohort, it was evidenced that upper gastrointestinal endoscopy was used in 49% of duodenal adenocarcinomas, colonoscopy in 41% of ileum adenocarcinomas and capsule endoscopy, and computed tomography enterography in 26% and 34% of jejunal adenocarcinomas[23].

Computed tomography and magnetic resonance enterography are the preferred modalities, requiring adequate preparation and oral contrast administration[2]. Generally, duodenal carcinomas are seen as polypoid and well-defined lesions, while jejunal and ileal carcinomas are seen as annular narrowing, abrupt or irregular stenosis, and may lead to obstruction[24]. In the laboratory, there are no specific tumor markers for its diagnosis, and these have limited diagnostic value[2]. However, carcinoembryonic antigen (CEA) and CA 19.9 show promise as prognostic markers, requiring further study to validate their use[25].

Due to the rarity of SBA, particularly in the ileum, differentiation from metastatic disease is of fundamental importance. Therefore, immunohistochemistry plays a crucial role, as the expression of specific markers allows confirmation of the tumor's origin in the intestinal epithelium[26]. In immunohistochemical analyses, SBA is positive for cytokeratin 7 (CK7) in more than 50% of cases and may also express CK20, CDX2, SMAD4, and villin. They can be distinguished from colorectal adenocarcinomas, which are typically negative for CK7 and positive for CK20[2].

The treatment of SBA is challenging and is defined according to its location and its stage. Surgical resection with adequate lymph node dissection is the main option for the treatment of resectable disease, but it can also be indicated palliatively in cases of symptomatic tumors that complicate with bleeding or obstruction[27]. However, about 40% of patients undergoing curative resection experience relapse after surgery[28]. Regarding adjuvant chemotherapy, there are no specific guidelines for small bowel adenocarcinoma, being adopted what is recommended for CRC[29].

SBA has a poor prognosis, with an estimated 5-year survival of 35%[8] and, even with surgical resection, it presents significant rates of local recurrence as well as the occurrence of distant metastases[18,20]. The effect that anatomical location of the primary SBA site has on patient outcome has been controversial and studies suggest that the prognostic impact of location in the small bowel decreases as the total number of lymph nodes evaluated increases[30]. Most patients have cancer in an advanced stage (Stage IV), presenting a worse prognosis. While 71.1% of individuals in stage I survived 5 years after diagnosis, only 4.3% of patients diagnosed in Stage IV survived for the same length of time[31].

Conclusion

The report presents a case of acute obstructive abdomen secondary to ileal adenocarcinoma in an elderly patient diagnosed 4 months after the onset of clinical manifestations. Although small bowel neoplasms are rare pathologies, their recognition, the understanding of their risk factors and pathophysiology, the identification of signs and symptoms that may be indicative of their presentation, as well as the necessary tests for their diagnosis, is essential to assist in the appropriate investigation and, consequently, to carry out an earlier diagnosis with better therapeutic possibilities for the patient, such as curative treatment. This report highlights the importance of suspecting small bowel neoplasms as a cause of gastrointestinal symptoms when other pathologies have already been ruled out.

Authors' contribution

We describe contributions to the papers using the taxonomy (CRediT) provide above:

Conceptualization, Investigation, Methodology, Visualization & Writing-review & editing: AFC Chiovato; BB Antolini; GR Rossignoli. *Project administration, Supervision & Writing-original draft:* AFC Chiovato; BB Antolini; GR Rossignoli; JH do A e Silva; NP Aguiar; SMP Camilo. *Validation & Software*: BB Antolini; AFC Chiovato; GR Rossignoli. *Resources & Funding acquisition*: AFC Chiovato; JH do A e S; NP Aguiar; SMP Camilo. *Data curation & Formal Analysis*: AFC Chiovato; JH do A e Silva; NP Aguiar; SMP Camilo.

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