

A Wolf in Sheep's Clothing

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ABSTRACT

Aim: Adenocarcinoma is one of the most common malignant tumours of the small intestine complicating Crohn disease. However, the coexistence of both neoplasms with diverticulosis of small bowel in young age makes this coincidence rare and clinical diagnosis very difficult.

Case presentation: We report a case of a woman admitted to our department with acute abdominal pain and fever. The surgical and histological investigation, revealed a rare coexistence that has never been mentioned in the published medical literature.

Conclusions: Ileal diverticulosis is not frequent and often asymptomatic as well as adenocarcinoma of small bowel. In this case, those diseases along with Crohn disease led the patient to acute symptoms.

Keywords: Crohn's disease, ileal diverticulosis, small bowel adenocarcinoma

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INTRODUCTION

It has been recognized that patients with Crohn's disease (CD) are at increased risk of developing malignant lesions (1). Small bowel adenocarcinoma develops in 1.5% of patients who have longstanding Crohn disease and is very rarely diagnosed pre-operatively because of its rarity, overlapping imaging features and lack of reported cases (1, 2). Adenocarcinoma in Crohn disease is more often poorly differentiated and carries a worse prognosis than does primary adenocarcinoma of small bowel. The median age at diagnosis is 49 years (2). The first reports of CD patients who subsequently developed cancer of the large or small intestine were published in 1948 and 1956, subsequently (3). In 1746, Hamburger made the first case report of duodenal carcinoma and the first review of malignant small bowel neoplasms was published in 1876 by Leichtenstein (2, 3).

Prevalence of small intestinal diverticula on autopsy ranges from 0.06% to 1.3% (4). The prevalence increases with age, peaking at the sixth and seventh decades. Eighty per cent of diverticula occur in the jejunum (JID), 15% in the ileum and 5% in both (4). If conservative management is unresponsive, successful treatment largely depends on surgical resection with primary anastomosis (5). Small bowel diverticula were first described by Soemmering and Baille in 1794 (6). The first operation was performed by Gordinier and Sampson in 1906 on a patient with partial small bowel obstruction, due to inflamed JID; resection of the involved jejunal segment was curative (6, 7).

We present, to the best of our knowledge, the very first case of concomitant adenocarcinoma of small bowel and JID in a patient with CD presenting with acute abdominal pain.

CASE PRESENTATION

A 38-year-old Caucasian female presented to the emergency room due to abdominal pain and intense diarrhoea syndrome from 48 hours. She also complained for sickness, anorexia and fever (her temperature was 39 °C) with chills. The use of painkillers offered few. There was no vomiting nor nausea but the last 24 hour complained for urinary retention. The patient had diagnosed with Erythema nodosum two years ago without taking any medication for that. The existence of inflammatory bowel disease (IBD) has never been evaluated before. There was no history of previous abdominal surgeries.

Physical examination revealed dehydration, diffuse abdominal tenderness more severe at left lower quadrant tenderness with rebound pain. The pregnancy test was negative and there was a diffuse sensitivity in gynaecological examination. A plain radiograph and ultrasound of the abdomen at the emergency were unremarkable. Computer tomography (CT) of the abdomen revealed thickening of the terminal ileum, increasing dimensions and thickening of the cecum. Additionally, an endopelvic abscess (40 cc) behind the sigmoid was also found (Fig. 1).



Fig: 1. Computer tomography (CT) of the abdomen revealed an endopelvic abscess.

An exploratory laparotomy with midline incision was made, revealing diverticulosis of small intestine, distended cecum, Meckel diverticulum and pus in the peritoneal cavity. A part of terminal ileum with the anterior wall of sigmoid was coalesced in pelvis. Resection of the terminal ileum and abscess drainage were performed. Reconstruction of the intestinal transit was achieved with an end-to-end ileocolic anastomosis.

Histologically (Figs. 2–6), the resected surgical specimen of final ileum (24.5 cm) was characterized by multiple inflamed pseudodiverticula, ulcers and focussed pylorus-like metaplasia with eosinophil and neutrophil cells. Moreover, epithelium-type granulomas and inflammation involving all layers of the intestinal wall, with abscesses and lymph nodes, were also found, setting the diagnostic direction to CD. Finally, adenocarcinoma with > 50% mucus was detected by well-differentiated neoplastic cells and Paneth cells among them. The malignancy infiltrated the intestinal wall, disintegrating the muscularis coat without extension to serosal layer. All lymph nodes (17 resected) were negative for malignant cells (T3N0Mx). The specimen of Meckel was characterized by heterotopic gastric mucosa with focussed adenoma of low grade dysplasia.

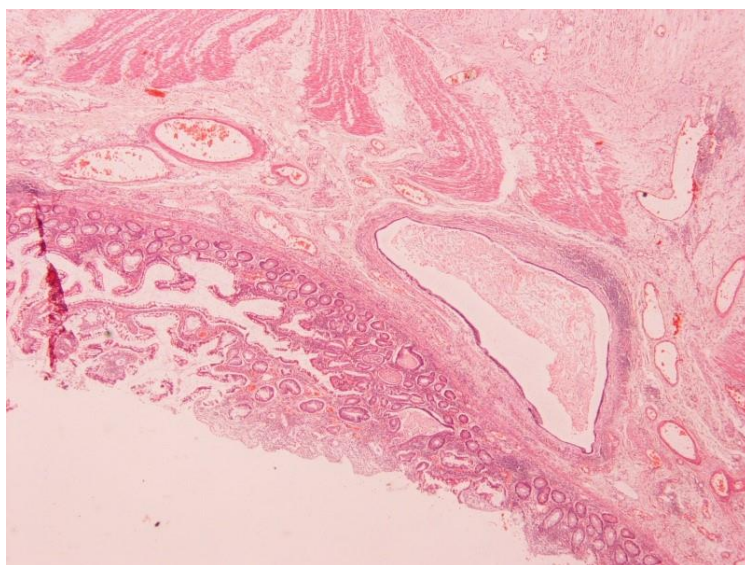


Fig: 2. Submucosal neoplastic gland lined by well-differentiated malignant cells.

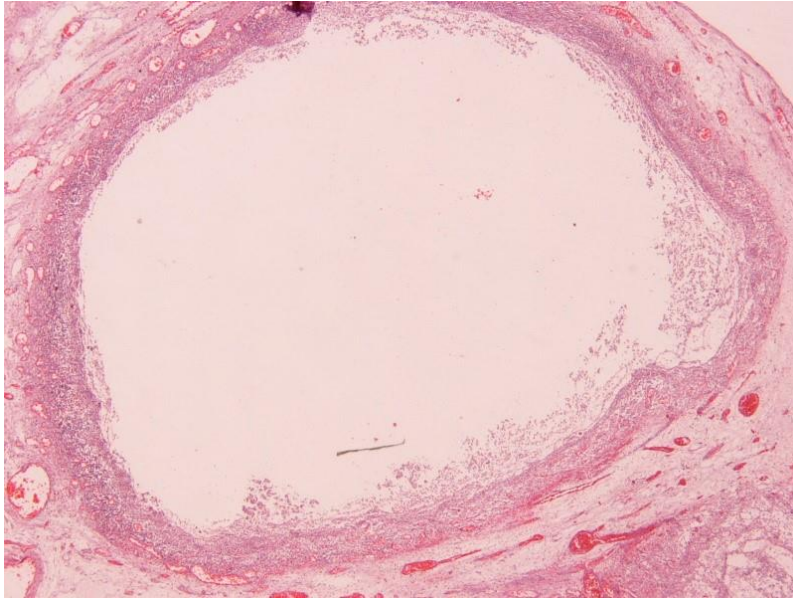


Fig: 3. Large abscess formation in submucosal mesenteric fat.

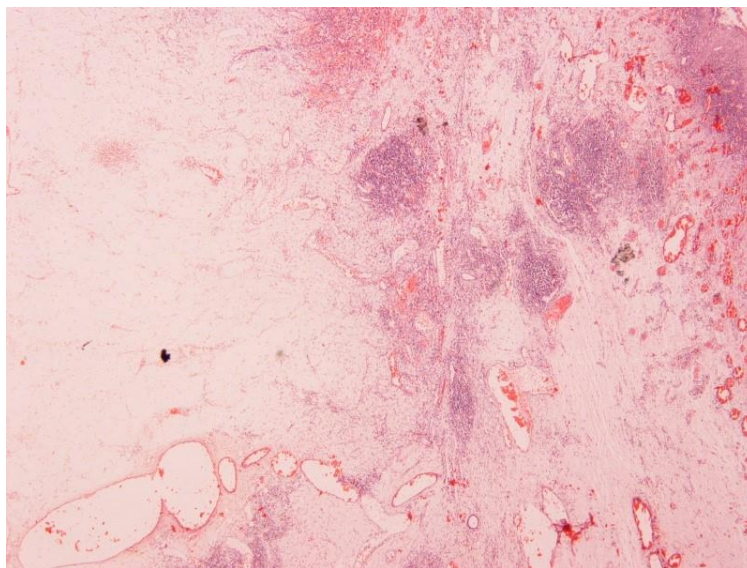


Fig: 4. Numerous prominent lymphoid aggregates into the perienteric fat tissue.

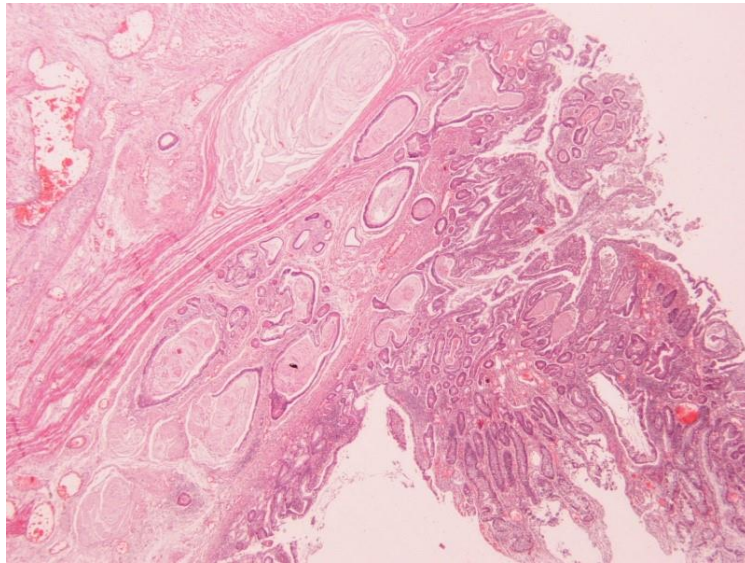


Fig: 5. Low-power magnification demonstrating the presence of neoplastic glands filled with mucin, invading the muscularis propria.

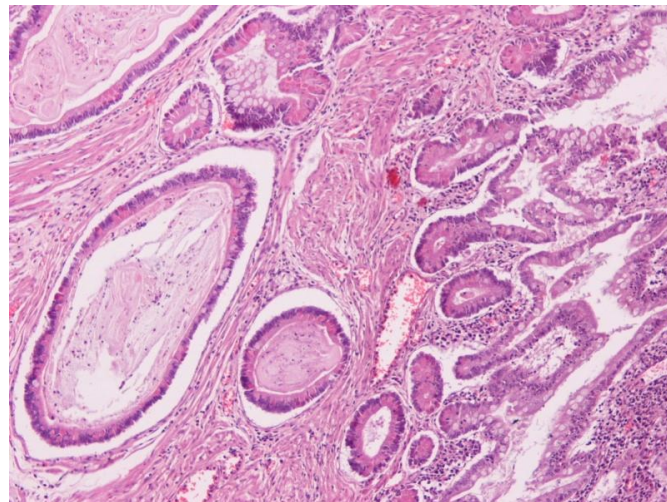


Fig: 6. Higher-power magnification demonstrates the well-differentiated malignant epithelial cells, with Paneth cells among them. The mucin is intraluminal as long as intracellular.

The patient was discharged in good general condition with the guidance for oncological consultation. However, one-week after her discharge, the patient was admitted again due to abdominal pain, fever, chill and in-appetence. She had suffered from constant pain located in sub-abdomen for two days, but denied diarrhoea and nausea.

Ultrasound of abdomen showed abscess of 10 cm in Douglas foramen and small pelvis. Abscess drainage and wide-spectrum antibiotics were administered. Oncological follow-up with CT-scan and clinical re-evaluations in the first six and 12 months revealed no disease recurrence.

DISCUSSION

The small bowel corresponds to 75% of the digestive tract length and 90% of its mucosal surface area, but surprisingly the frequency of neoplasms is lower than in the stomach or the large bowel. This apparent “neoplastic resistance” finds its eventual explanation in the low bacterial content capable of transforming food components into carcinogens, along with the large amount of alkaline fluid secretion, the rapid transit time, and the high concentration of the enzyme benzopyrene hydroxylase, which reduce the mucosal contact with potential carcinogens (8). The mean age of diagnosis of small bowel tumours is 60 years of age, with a slight male preponderance. Adenocarcinoma is the most common histologic type (30–50%) (7).

About 2% of patients affected by CD will develop cancer in the course of their disease, and, in contrast to the patients with ulcerative colitis (UC), those with CD are at risk for developing malignancy even in the first decade of their disease (9). The coexistence of CD with adenocarcinoma is predominantly seen in men, in the patients with excluded loop and most frequently in the distal ileum in an area of active disease (9). Most patients presenting with adenocarcinoma complicating CD have a high-grade malignancy with lymph node involvement or distant metastases, because the similarity of the presenting symptoms and of the radiography of these pathologies creates diagnostic problems for the physician and make an early diagnosis impossible (1). The most frequent presenting symptoms are

abdominal pain, anaemia and small bowel obstruction. In most cases (88%) adenocarcinoma is found incidentally at surgery (2).

Jejunal diverticulosis (JID) is a rare disorder and the course of the disease is mostly asymptomatic. Its reported incidence varies from 0.05% to 6% (4). This rare entity should not be regarded as a clinically insignificant finding. It may be difficult to make a pre-operative diagnosis. Diagnosis is often delayed, resulting in unnecessary morbidity and mortality (10). They are most common in the duodenum with a frequency of approximately 5%. They are less common in the ileum (11).

Presenting complaints such as intermittent abdominal pain, constipation and diarrhoea, akin to those seen in irritable bowel syndrome, have been demonstrated in up to 90% of the patients (5). There are no pathognomonic signs or symptoms of small-bowel diverticulitis. However, they may be associated with obscure gastrointestinal bleeding or bacterial overgrowth and may on occasion become impacted with ingested food, become inflamed and present with acute abdominal pain (10).

Complications due to JID include pseudoobstruction, blind loop syndrome, jejuna dyskinesia and chronic diverticulitis complicated by the formation of enterolith. More acute complications include perforation, peritonitis, bleeding and fistula formation (12). The differential diagnosis includes perforated neoplasm, foreign body perforation, small bowel ulceration from nonsteroidal anti-inflammatory drug use, CD and diverticulitis. Perforated neoplasms can be difficult to distinguish from JID. The most likely neoplasm to perforate would be lymphoma.

Resection of the involved area with primary jejunojejunal anastomosis is the surgical management of choice in the presence of perforated JID, haemorrhage, or abscess formation after a failure of a short course of bowel rest and antibiotics (11).

Small bowel diverticula are thin-walled sacculations that, in contrast to Meckel diverticula (13), consist only of mucosa, submucosa and occasionally a thin layer of serosa without muscle (can thus be referred to as “pseudodiverticula”). They are almost always located on the mesenteric border, at the site of entry of the vasa recta which consist the locus minoris resistentiae of the small bowel (14). This proximity of the fundus of the diverticula to branches of the mesenteric vessels is responsible for the haemorrhagic complications of the disease (15).

The clear predominance of diverticula in the jejunum is probably attributed to the greater diameter of the penetrating vessels in the proximal part of the small bowel. Actually, the number of JID decreases as we move distally from the ligament of Treitz with nearly 80% of them occurring in the jejunum, 15% in the ileum and 5% in both (4). Their size vary considerably, often reaching a diameter of more than 5 cm. Although it has been suggested that some JID may be congenital (solitary diverticula in young patients may represent partial reduplication of the small bowel), it is now widely accepted that most of these lesions are acquired. The pathogenesis seems to be multifactorial (16).

Regarding the aetiology of JID, the current hypothesis focusses on abnormalities in the smooth muscle or myenteric plexus (17). Careful microscopic evaluation of jejunal specimens with diverticula has shown that these abnormalities are of three types: fibrosis and decreased numbers of normal muscle cells, consistent with progressive systemic sclerosis; fibrosis and degenerated smooth muscle cells, suggestive of a visceral myopathy; neuronal and axonal degeneration indicative of visceral neuropathy (17). Any of these abnormalities could lead to distorted smooth muscle contractions of the affected small bowel generating increased intraluminal pressure. The result is herniation of mucosa and submucosa through the weakest mesenteric site of the bowel wall with penetration induced by paired blood vessels from the mesentery (18).

Diverticula are depicted, either on plain films or on CT scans, as sacculations with retained contrast medium after the main bowel lumen has become empty. Enteroclysis, additional diagnostic media, such as ultrasound, computed tomography, endoscopy, capsule endoscopy, intra-operative endoscopy, deep enteroscopy with single or double-balloon and spiral enteroscopy can be used (19, 20). Laparoscopy, radio-tagged erythrocyte bleeding scans and selective mesenteric arteriography can be performed as well. Laparotomy remains the gold standard for definite diagnosis of asymptomatic and complicated diverticula (16).

Compared with duodenal diverticula, JID are nearly four times more likely to develop complications and nearly 18 times more likely to perforate and develop abscesses (5). Both CD and JID are seen with sufficient frequency that unless one disease protects from the other, one would occasionally expect to see coincident disease (21, 22).

CONCLUSIONS

Perforation of a JID has to be considered in the differential diagnosis of acute abdomen. Although JID with its complications, such as perforation, is difficult to suspect in patients with peritonitis, it should be considered as a possible source of abdominal infection in the elderly patient when more common diagnoses have been excluded or in patients with pathophysiological background making them susceptible to JID development, such as CD.

Small bowel adenocarcinomas are rare tumours, but their incidence is increasing. Despite being most often sporadic, some predisposing diseases have been identified, among which CD and genetic syndromes. Early diagnosis of small bowel adenocarcinoma remains difficult despite significant radiological and endoscopic progress. We present, to our knowledge, the very first case of concomitant adenocarcinoma of small bowel and JID in a patient with CD presenting with acute abdominal pain.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

ES, DeM and PT wrote the paper, assisted at the operation and looked after the patient postoperatively. SS, EAT and PK are the pathologists who examined the specimen. DD analysed and interpreted patient's files and contributed in the writing. DM is the supervising professor who decided and performed the operation. All authors read and approved the final manuscript.

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