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Case Report

Jejunoileal diverticulosis, a rare cause of ileal perforation – Case report

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HIGHLIGHTS

- Jejunoileal diverticulosis is rare and it's symptoms usually nonspecific.
- Diagnosis is usually made incidentally or after the development of complications.
- Chronic symptoms are frequent, mainly abdominal pain or malabsorption.
- Diverticulitis, with or without perforation, is the most common complication.
- Although surgery is the definite treatment, medical therapy can be considered.

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ABSTRACT

Introduction: Jejunoileal diverticulosis (JID) is a rare condition associated with nonspecific symptoms, consisting of acquired false diverticula. It frequently co-exists with colonic diverticulosis. Diagnosis is usually made incidentally or after complications. These include hemorrhage, obstruction and diverticulitis, with or without perforation.

Presentation of case: 81-year-old man presented with a painful abdominal mass in the right lower quadrant (RLQ), diffuse abdominal discomfort and fever. Abdominal examination confirmed a well-defined mass in the RLQ without rebound tenderness. Laboratory analysis revealed elevated inflammatory markers and CT scan showed a cavitated lesion with an air-fluid level in the RLQ, without evidence of intraperitoneal free air or fluid. Admitted for conservative treatment, failure to improve led to laparotomy on the 6th day of hospitalization, with identification of jejunoileal diverticulosis complicated with diverticulitis and walled-off perforation. We performed segmental enterectomy.

Discussion: The incidence of JID is estimated at 0.2–7% and it is usually diagnosed in the sixth/seventh decade of life. From a diagnostic perspective, JID is a challenging disorder, without reliable diagnostic tests. Diverticulitis is the most common complication. Perforation generally causes only localized peritonitis, as involved diverticula are often walled off by the surrounding mesentery. In selected cases, medical therapy may suffice. For all other patients prompt laparotomy with segmental intestinal resection is the treatment of choice.

Conclusion: JID remains under diagnosed. When it presents as an acute complication it may require immediate surgical intervention. In an elderly person, especially with known gastrointestinal diverticulosis, one must have a high index of suspicion for perforation.

1. Introduction

Jejunoileal diverticulosis (JID) is rare with a reported incidence of 0.06–2.3% in contrast studies, rising to 0.3–4.5% in autopsy studies [1–3]. They frequently coexist with colonic diverticula, both being pulsion type acquired diverticula which points to a common ethiology [4]. Although only 40% of these patients remain asymptomatic, jejunal diverticulosis is usually not suspected clinically as symptoms are often vague and nonspecific (chronic abdominal pain and/or malabsorption) [2]. As such, diagnosis of this condition is usually made incidentally or after complications as hemorrhage, diverticulitis or obstruction. We present a rare cause of acute abdominal pain with a case of jejunal diverticulitis complicated with perforation.

Abbreviations: CT, computed tomography; JID, Jejunoileal Diverticulosis; MR, magnetic resonance.

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2. Case report

We report the case of an 81-year-old man with a painful abdominal mass in the right lower quadrant that he had noticed in the previous 8 days. He also complained of diffuse abdominal discomfort and sometimes dull pain that subsided spontaneously, but didn't identify any ameliorating or aggravating factor. When questioned he also had weight loss (10 Kgs in the last 6 months), fatigue and lethargy but without altered bowel habits, fever or other symptoms.

The patient had a past medical history significant for hypertension, class II (NYHA) ischemic heart failure, type 2 diabetes and Parkinson's disease. No known history of colonic diverticulosis or previous surgery.

On physical examination the patient was febrile (auricular temperature 37.9 °C) with a heart rate of 105 bpm, blood pressure 90/50 mmHg and respiratory rate 16 bpm.

Abdominal examination revealed a round, tender, elastic mass in the right flank, with approximately 8 × 6 cm, intra-peritoneal and mobile, with associated tenderness, but without rebound tenderness or other signs of peritonitis. We also confirmed the presence of a left inguinal hernia, easily reducible. Abdominal sounds were normal. Digital rectal examination was also normal.

Laboratory analysis revealed an elevated white cell count (13.9×10^9/L) and an elevated C-reactive protein (10.0 mg/dl; cut-off < 0.5 mg/dL), without any other alterations.

Intravenous contrast enhanced CT scan of the abdomen and pelvis revealed a thin-walled, cavitated lesion with an air-fluid level in the right iliac fossa, limited by thickened small bowel loops and apparently with luminal continuity with at least one segment. There was no evidence of intraperitoneal free air or fluid (Fig. 1).

After hemodynamic resuscitation, the patient was admitted to the surgical ward for conservative treatment (antibiotic, fluids and *nil per os*). Although the patient showed overall clinical improvement and normalization of the inflammatory markers, there was no alteration of the palpable mass and the patient maintained post-prandial bloating. Consequently, on the 6th day of hospitalization, we decided to perform an exploratory laparotomy. We identified the presence of an inflammatory mass involving multiple jejunal loops and extensive diverticulosis of the jejunum, proximal ileum and the entire colon (Figs. 2 and 3). Further dissection revealed a walled-off perforation of the jejunum, possibly secondary to complicated diverticulitis. We performed segmental enterectomy (15 cm) with primary latero-lateral anastomosis.

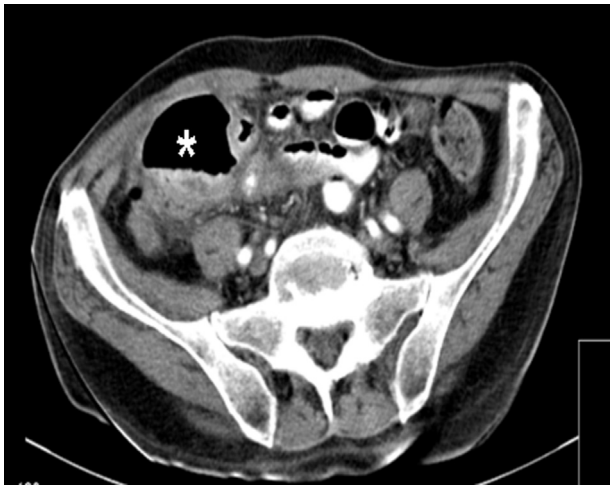

Fig. 1. CT scan showing cavitated lesion with air-fluid level (*).

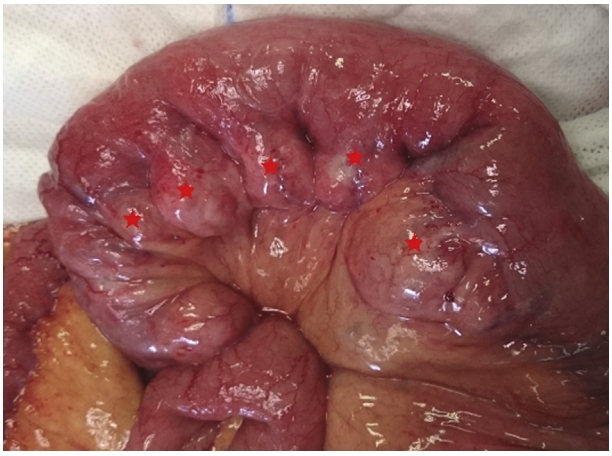

Fig. 2. Intraoperative findings with multiple mesenteric jejunoileal diverticula (★).

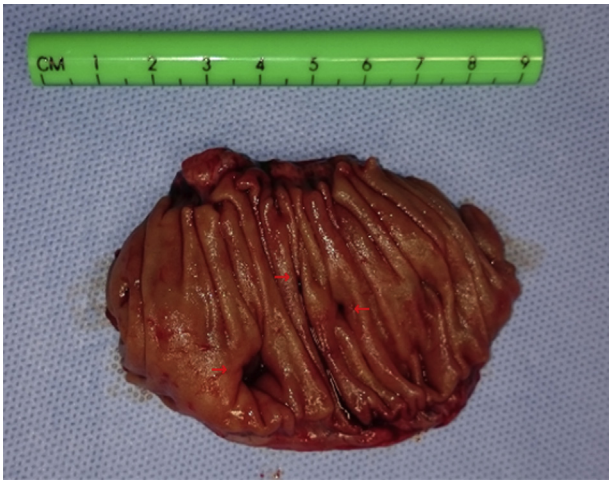

Fig. 3. Enterectomy specimen – note the multiple mucosal diverticular orifices (arrows).

Histology confirmed multiple jejunal diverticula with mucosal ulceration and inflammatory lesions suggestive of diverticulitis.

The post-operative period was complicated by *delirium*, but was otherwise uneventful and the patient was discharged on day 5.

This case was reported in accordance with the CARE guidelines [5].

3. Discussion

JID represents 18% of all small bowel diverticula, but they are most likely to become symptomatic in a patient's lifetime compared to other small bowel diverticula [6,7]. About 80% of jejunoileal diverticula are located in jejunum, 15% in the ileum and 5% coexisting in both [4].

The incidence of JID is estimated at 0.06%–4.5%, based on radiographic and autopsy data [2], most being diagnosed in the sixth or seventh decade of life [4]. Some studies show a male preponderance [8], whereas others show an equal gender distribution. They are usually found as multiple diverticula and associated colonic diverticulosis is found in up to 75% of patients [2,6].

Although the true etiology of jejunal diverticula is unknown, this condition is believed to develop from a combination of intestinal motility disorders, focal weakness of the muscularis and high segmental intra-luminal pressures [8,9]. In JID, the acquired diverticula arise on the mesenteric border, where the mesenteric

vessels penetrate the jejunum. They can vary in size, are usually multiple and more prominent in the proximal jejunum, diminishing in both number and size caudally [10,11]. This findings contrast with a Meckel's diverticulum, a true congenital outpouching, that develops from the anti-mesenteric border, secondary to omphalomesenteric duct malformation [12,10,11].

From a diagnostic perspective, JID is a challenging disorder, without reliable diagnostic tests. The most usual form of symptomatic presentation is chronic symptoms, occurring in approximately 60% of patients [2]. These patients exhibit a constellation of symptoms that range from early satiety, bloating, chronic upper abdominal discomfort and vague abdominal pain to a syndrome of bloating, steatorrhea and malabsorption [12]. Small bowel diverticula should be considered in patients presenting with such unexplained chronic symptoms [13]. In such cases, contrast imaging of the gastrointestinal tract is the preferred diagnostic modality, preferably with MR enterography/enteroclysis that may reveal globular outpouchings of the small bowel [14]. However, the diagnosis is often made only when complications occur.

Acute complications occur in 10%–20% of patients with jejunal diverticular disease and include intestinal hemorrhage, diverticulitis with or without perforation and obstruction [4,7].

Diverticulitis, with or without perforation, is the most common complication of JID which occurs in 2.3%–6.4% and accounts for 30%–50% of the complicated cases [6,10]. More than 80% of perforations result from diverticulitis, but it can be also the result of trauma or foreign body [12]. Abdominal pain, leukocytosis and fever are usually present. Perforation generally causes localized peritonitis, as involved diverticula are often quickly walled off by the surrounding mesentery [10].

The diagnosis of a perforated diverticulum is rarely made preoperatively, as it happened in our case. In the emergency setting, abdominal CT is the modallity of choice with findings that include thickening or inflammation of the jejunum and mesentery, localized abscess formation, air-fluid collection in contiguity with SB loops, free peritoneal air, and occasionally visualization of the diverticulum [14,15].

If the perforation of a jejunal diverticulum causes only localized peritonitis and the patient remains stable, it has been reported that medical management with intravenous antibiotics, bowel rest and percutaneous CT-guided aspiration of localized intraperitoneal collections may be suitable and avoid the need for surgery [16]. For patients with perforated jejunal diverticula and localized peritonitis not responsive to non-surgical treatment, as in our case, and for those with generalized peritonitis, the current treatment of choice is prompt laparotomy with segmental intestinal resection and primary anastomosis [3]. The extent of bowel resection depends upon the length of the diseased bowel and the patient's perioperative condition. Limited procedures, such as simple closure, excision, and invagination, are associated with a 3-fold increase of the mortality rate and should be abandoned [6]. However, if diverticula are extensive, resection may have to be limited to include only the segment containing the perforated diverticulum and to leave a segment of small bowel that still contains non-perforated diverticula in order to avoid recurrences and short bowel syndrome [8].

Mortality rates for perforations range from 21% to 45% as a result of diagnosis delay [3,6,10]. The time frame between clinical presentation and diagnosis seems to be the biggest determinant of prognosis [6].

4. Conclusions

JID is a rare entity that may lead to chronic non-specific abdominal symptoms, often unrecognized in history taking. It is an under diagnosed condition since its incidence almost doubles on autopsy studies. However, it can also present as an acute complication, one of its form being intestinal perforation, which may require immediate surgical intervention. In an elderly person, especially with known gastrointestinal diverticulosis, one must have a high index of suspicion for perforation.

Ethical approval

Not submitted to ethical approval – Case report.

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Author contribution

Nádia Tenreiro: study design, data collection and writing.
Herculano Moreira: writing and revision.
Silvia Silva, Rita Marques, Ana Monteiro: data collection.
João Gaspar, António Oliveria: revision of the manuscript.

Conflicts of interest

No conflict of interests.

Guarantor

Herculano Moreira.

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 on request."

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