



Case report

Jejunal diverticulitis: A new case report and a review of the literature

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ABSTRACT

Introduction: Although diverticular disease of the duodenum and colon is frequent, the jejuno–ileal diverticulosis is an uncommon entity.

Presentation of case: A 70-year-old woman presented with a left upper quadrant pain evolving for 24 h associated with vomiting. Physical examination revealed an abdominal tenderness on left upper quadrant. Laboratory exams revealed an increased white blood cell count. The CT of the abdomen demonstrated a round lesion containing faecal-like material mixed with gas depending on the jejunum in the left side of abdomen associated with densification of the adjacent mesentery fat. The diagnosis of uncomplicated jejunal diverticulitis was suspected. The patient underwent six days of antibiotics. Two weeks later, a prophylactic diverticulectomy was performed. Histopathological examination showed diverticula on the jejunum with focal necrosis. The post-operative course was uneventful.

Discussion: Diverticular disease can be widespread in the small bowel. Jejuno–ileal diverticula do not have pathognomonic clinical symptoms and they often present with non-specific symptoms. Complications of JD include perforation, abdominal abscesses, acute intestinal obstruction and diverticular bleeding. Diagnosis is often difficult and is confirmed mainly by imaging studies and CT is the modality of choice. There is no consensus on therapeutic strategy. There are different therapeutic approaches depending on the severity of the disease and the general clinical condition of the patient going from the conservative management with bowel rest and a broad-spectrum antibiotic to the surgery with intestinal resection.

Conclusion: Jejunoileal diverticulitis should be always kept in mind as a cause of abdominal pain in the elderly patient. The management is based on surgery. The resection of the affected intestinal segment with primary anastomosis prevents recurrences.

1. Introduction

Although diverticular disease of the duodenum and colon is frequent, the jejuno–ileal diverticulosis is an uncommon entity. Its prevalence increases with age and ranges from 0.06 % to 4.60 % [1]. Pathologically, they are known as pseudodiverticula of pulsion type, resulting from increased intra-luminal pressure and weakness of the bowel wall. Small bowel diverticulosis is often asymptomatic and discovered incidentally on imaging [2]. This rare entity may present with a range of symptomatic complications such as obstruction, anemia, volvulus [3] and diverticulitis. The latter is considered to be the most frequent complication with an incidence ranging from 2 to 6 % [4]. Diverticulitis can lead to diverticulum perforation in 2.1 % to 7 % of cases, with local abscess or generalized peritonitis. This complication is associated with a high mortality in up to 40 % of patients [5]. The diagnosis is challenging and based on radiological findings and computed tomography (CT) is

the cornerstone of the diagnostic modality [4]. Given that, there is no consensus about the therapeutic strategy, which varies from conservative management to surgical resection. We herein report a new case of jejunal diverticulitis in an elderly patient and we review the relevant literature on the topic.

This work has been reported in line with the SCARE 2020 criteria [6].

2. Case presentation

A 70-year-old woman presented to our Emergency Department with a left upper quadrant pain evolving for 24 h associated with vomiting without fever or altered bowel habits. The medical history of the patient reported arterial hypertension and open cholecystectomy. Her physical examination revealed an afebrile patient with a right subcostal incision, abdominal tenderness on left upper quadrant. The rest of the abdomen

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was painless. Laboratory exams revealed an increased white blood cell (WBC) count (WBC 15.300/mm). The C-reactive protein (CRP) was negative (3.20 mg/dL). The CT of the abdomen demonstrated a round lesion containing faecal-like material mixed with gas measuring 5.4 cm × 5.8 cm × 4.6 cm depending on the jejunum in the left side of abdomen associated with densification of the adjacent mesentery fat and some inflammatory nodes (Fig. 1). There was no intra-abdominal collection or pneumoperitoneum. Therefore, the diagnosis of uncomplicated jejunal diverticulitis was suspected. The patient underwent six days of antibiotics associating: cephalosporin, aminosid and metronidazole with bowel rest. Two weeks later, a prophylactic diverticulectomy was decided in order to minimise the risk of recurrence. The patient was operated on via a midline incision. Per-operative exploration found multiple uncomplicated diverticula on the mesenteric and anti-mesenteric side of jejunal segment. There was a giant diverticulum on the mesenteric side of a proximal jejunal segment at a distance of about 10 cm from the Treitz ligament measuring 5 cm in diameter with a thickened wall and with a 2 cm neck (Fig. 2). We performed a diverticulectomy by a linear stapler. Histopathological examination showed diverticula on the jejunum with focal necrosis. The patient tolerated very well the surgical procedure and the post-operative course was uneventful, and she was discharged on the fourth post-operative day.

3. Discussion

Jejuno-ileal diverticulosis was first described by Sommering in 1794 [7]. Most patients being in the sixth and seventh decade of life. Small bowel diverticula are twice as frequent in men as in women. The diverticula have a tendency to be numerous and bigger in the proximal jejunum. The size of the diverticula may range from a few millimeters to

more than 26 cm [8]. Diverticular disease can be widespread in the small bowel. It is known to be more common in the proximal jejunum (75 %), followed by the distal jejunum (20 %) and the ileum (5 %) [9]. Small bowel localization of diverticula can be associated with other digestive localizations such as the colon in 35–75 % of cases; the duodenum in 15–42 %, the oesophagus in 2 % and the stomach in 2 %. There are two different kinds of small bowel diverticula: congenital ones and acquired ones. Jejuno-ileal diverticulosis are commonly acquired and subdivided in two groups: primary, or secondary to Crohn's disease, tuberculosis, and abdominal surgery. Jejuno-ileal diverticulosis involves only the mucosal and submucosal layers, and is characterized by herniation of these two layers through the muscular layer of the bowel wall and are called *false diverticula* [10].

Until today, several hypotheses have been proposed to explain the pathogenesis of diverticular disease in small bowel. Three different types of microscopic abnormalities have been hypothesized: visceral neuropathy, visceral myopathy and progressive systemic sclerosis [9].

Unlike those found in the colon, jejuno-ileal diverticula do not have pathognomonic clinical symptoms and they often present with non-specific symptoms like intermittent abdominal pain, dyspepsia, bloating or abdominal fullness, constipation, diarrhea, malnutrition, anemia. Complications of JD include perforation, abdominal abscesses, acute intestinal obstruction (2.3–4.6 %) and diverticular bleeding (2–8.1 %) [8].

Diagnosis is often difficult and is confirmed mainly by imaging studies (Table 1). Jejuno-ileal diverticula are incidentally discovered during barium swallow, laparotomy or autopsy in the majority of cases. The differential diagnosis includes neoplasms, appendicitis, cholecystitis, foreign body perforation, traumatic haematoma, medication-induced ulceration and Crohn's disease.

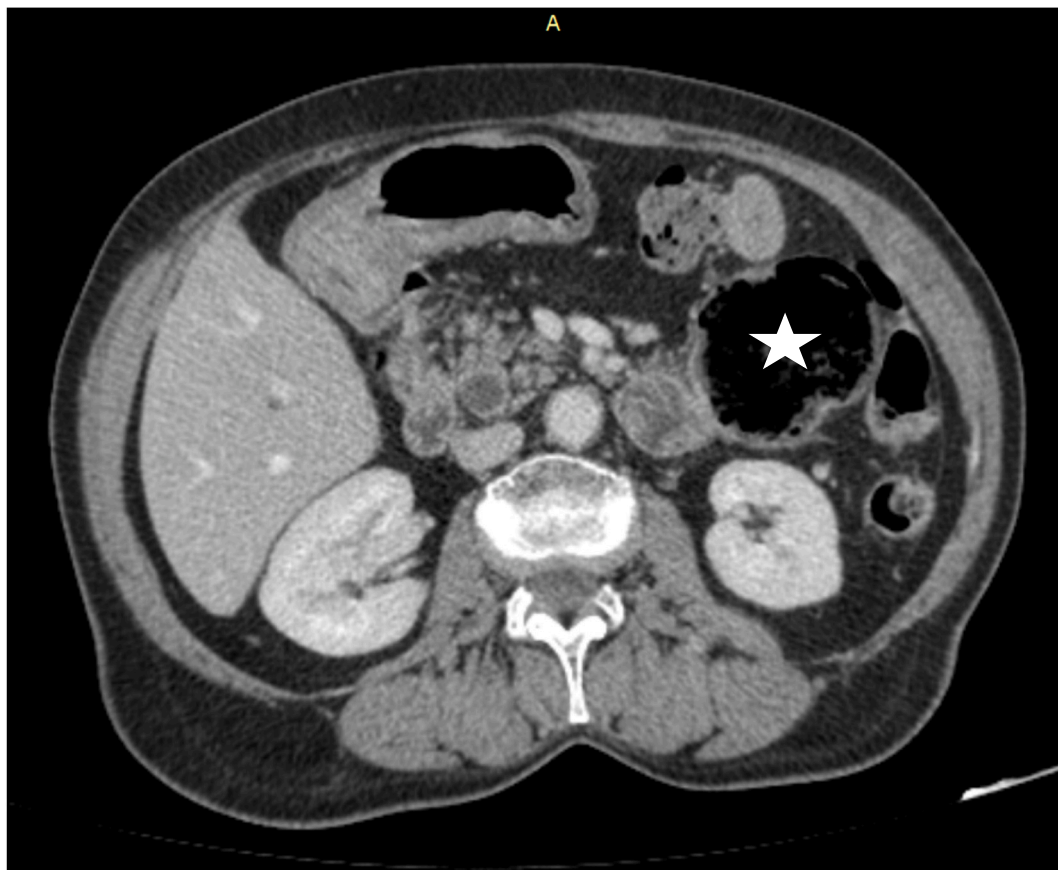


Fig. 1. The CT-scan of the abdomen showing a round lesion containing faecal-like material mixed with gas measuring 5.4 cm × 5.8 cm × 4.6 cm depending on the jejunum.

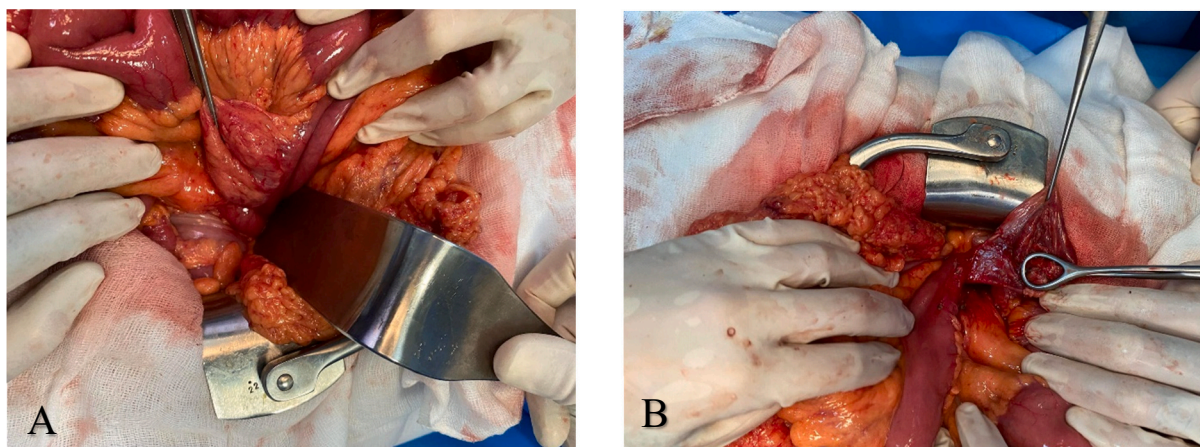


Fig. 2. Intraoperative view of the giant diverticulum of the mesenteric side of the proximal jejunum.

Table 1

Management of jejunal diverticulitis reported between 2015 and 2021.

Reference	Year	Age	Sex	Symptoms	Radiologic investigation	Treatment
Fidan N [18]	2015	67	M	Localized abdominal pain+fever	CT-scan	Conservative
Kassir R [19]	2015	79	M	Generalized abdominal pain+fever	CT-scan	Resection
Natarajan K [20]	2015	56	M	Localized abdominal pain +fever; vomit	CT-scan	Resection
Khan HS [21]	2015	33	M	Abdominal pain Fever; vomit	NM	Resection
Blake-Siemsens JC [22]	2016	53	M	Localized abdominal pain +nausea+vomit+Melena	CT angiography	Resection
Harbi H [11]	2016	31	M	Generalized abdominal apin +fevere hypothermia and septic shock	CT-scan	Resection
Nakatani K [23]	2016	37	M	Abdominal pain+fever+nausea	CT-scan	Conservative resection after recurrence
Ghrissi R [24]	2016	72	M	Vomit+ recurrent bowel obstructions	Without investigation	Resection
Tenreiro N [25]	2016	81	M	Painful abdominal mass + fever	CT-scan	Conservative = fail resection
Aydin E [26]	2016	69	M	Abdominal pain +vomit	CT-scan	Resection
Walter BM [27]	2016	83	F	Localized abdominal pain	Abdominal-pelvic ultrasonography	Conservative resection after recurrence
Walter BM [27]	2016	56	M	Abdominal pain	CT-scan	Resection
Mohi RS [28]	2016	62	M	+Localized abdominal pain+constipation+ vomit	CT-scan	Resection
Kumar D [29]	2017	68	M	Generalized abdomen pain+ constipation	CT-scan	Resection
Grubbs J [30]	2017	90	M	Abdominal pain +fever; nausea + vomit+ diarrhea	CT-scan	Conservative failed, then resection
Ejaz S [31]	2017	87	M	Localized abdominal pain +fever	CT-scan	Conservative
Ejaz S [31]	2017	78	F	Abdominal pain+diarrhea	CT-scan	Conservative
Ejaz S [31]	2017	76	F	Constipation + vomit	CT-scan	Conservative
Fleres [8]	2018	88	F	Generalized abdominal pain +fever	CT-scan	Resection
Fleres [8]	2018	86	F	Generalized abdominal pain+fever; nausea and vomit	CT-scan	Resection
Gurala [32]	2019	76	F	Abdominal pain+ nausea + vomit	CT-scan	Surgery resection
Prough [33]	2019	65	M	Abdominal pain+fever+ nausea	CT-scan	Surgery resection
Leigh [34]	2020	59	F	Abdominal pain	CT-scan	Surgery resection
Chung [35]	2021	69	F	Generalized abdominal pain +vomit +constipation	CT-scan	Surgery resection
Vayzband V [36]	2021	71	M	Localized then generalized abdominal pain +fever	CT-scan	Surgery resection
Ben Ismail I [37]	2021	52	M	Localized abdominal pain + fever	CT-scan	Surgery resection
S Sferra [38]	2021	60	M	Generalized abdominal pain	CT-scan	Surgery resection

The Jejunum is difficult to examine using the endoscopic methods; therefore, the radiologic ones are still the diagnostic tool of choice [11]. Ultrasound is not suitable for JD diagnosis since it is usually hindered by intestinal gas emphasized by reflectory ileus associated with any intra-peritoneal inflammatory process [12].

The CT is now the best diagnostic imaging method especially with the aid of multiplanar reformatted images [13]. The pre-eminent imaging features in JD are peridiverticular edema and inflammation or diverticular wall thickening [14]. The inflammatory changes are often more pronounced along the mesenteric bowel border, which is the typical location of small bowel diverticula [13]. “Fecalized diverticulum sign” defining the fecalized and gazyous content in the small bowel diverticula was present in 51 % of cases. This sign can be helpful in identifying the culprit diverticulum [13].

In cases where CT with oral contrast is not contributory Magnetic resonance enterography (MRE) can be quite useful for the diagnosis of JD. But as MRE is not routinely available in many centres, it only rarely contributes to the diagnosis in emergency cases [9].

There is no consensus on therapeutic strategy. There are different therapeutic approaches depending on the severity of the disease and the general clinical condition of the patient. If the diverticulitis is uncomplicated with hemodynamically stable patients the conservative management may be attempted with bowel rest and a broad-spectrum antibiotic coverage associating: cephalosporin, aminosid and metronidazole [15].

In case of intraperitoneal collections, intravenous antibiotics and CT-guided drainage can be enough. Intestinal resection is mandatory in two situations: failure or unfeasibility of percutaneous drainage and in case

of generalized peritonitis [8]. Immediate anastomosis should be performed whenever allowed by abdominal and general conditions of the patient [16]. Otherwise, jejunostomy seems reasonable in shocked or high-risk patient.

However, if the perforated diverticulum is next to the duodeno-jejunal flexure, diverticulectomy seems appropriate to avoid anastomotic complications. If diverticula extend over a long portion of small bowel, we have to limit the resection to the perforated diverticulum segment, to avoid short-bowel syndrome. The laparoscopic approach is feasible in experienced hands and if the hemodynamic state of the patient allows it [17].

4. Conclusion

Jejunoleal diverticulitis is frequently overlooked as a possible source of abdominal pain in the elderly patient, that's why this pathology should be always kept in mind. Radiological investigations are the key pre-operative diagnostic modality, hence preventing complications and delayed diagnosis. The management of jejunoleal diverticulitis is based on surgery. The resection of the affected intestinal segment with primary anastomosis prevents recurrences. However, the resection is mandatory in case of complications like perforation, abscess and obstruction.

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Ethical approval

Ethical approval was not required and patient identifying knowledge was not presented in the report.

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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Declaration of competing interest

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