

Jejuno-ileal diverticulosis : a review of literature

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Abstract

Jejunal diverticulosis is a rare entity with variable clinical and anatomical presentations. The majority of cases are discovered incidentally during radiological investigations. Based on a case of a 77 year old woman with jejunal diverticulitis, the current literature about small bowel diverticulosis is reviewed. A jejuno-ileal diverticulum is usually uncomplicated and can be treated conservatively. Serious complications that require surgery can occur. Abdominal CT is the preferred diagnostic tool. (*Acta gastroenterol. belg.*, 2018, 81, 517-519).

Key words : Jejuno-ileal diverticulosis ; diverticulitis.

Introduction

Jejuno-ileal diverticulosis (JID) is a rare entity, most often found incidentally during radiological investigations (1). Because of aspecific symptoms, diagnosis is often delayed (1-3). The major complications include acute intestinal obstruction, diverticular bleeding and bowel perforation (2). Abdominal computed tomography is the gold standard in diagnosis (4,5). Non-surgical treatment is usually sufficient, but it does not prevent the recurrence of diverticulitis (1).

Case illustration

A 77-years-old woman presents with increasing abdominal pain in the past two weeks. There was reduced appetite, but no history of vomiting. The stool pattern was normal without melena or red blood loss. The further system history did not reveal any particularities. Physical examination revealed right lower quadrant tenderness. Abdominal computed tomography with intravenous contrast showed pronounced ileal diverticulosis (Figure 1) with secondary (peri)diverticulitis and micro-abscesses (Figure 2). There was no pneumoperitoneum or intraperitoneal fluid. C-reactive protein was 260 mg/L (ref. <3.2 mg/L) and white blood cell count was $9.79 \times 10^3/\mu\text{L}$ (ref. 4.2 - $9.8 \times 10^3/\mu\text{L}$). The patient was hospitalized and treated with intravenous administration of amoxicillin-clavulanic acid (ten days), fluid administration and pain medication. With this treatment there was an excellent recovery.



Fig. 1 — Uncomplicated jejunal diverticulosis.

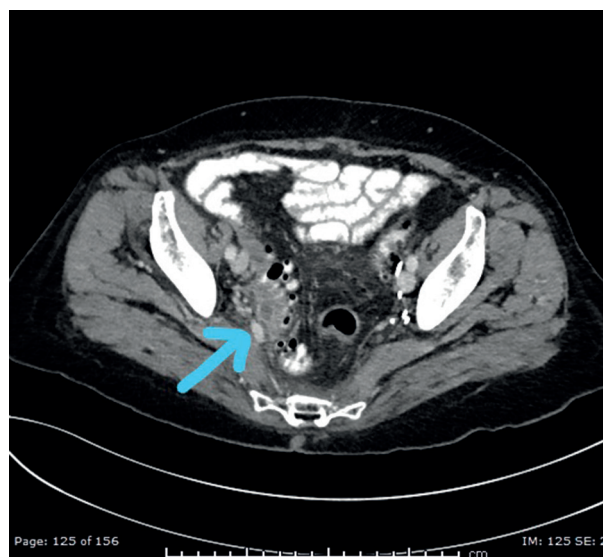


Fig. 2 — Jejunal (peri)diverticulitis with micro-abscess (arrow).

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Overview of literature

Incidence and prevalence

JID was first described by Sommering in 1794. It is found twice as much in men as in women, 75% are found incidentally (6). Diverticula can be located at any location of the gastro-intestinal tract, from the upper esophagus to the colon (1). In order of decreasing frequency, they are found in the colon, duodenum, esophagus, stomach, jejunum and ileum (3). Jejunal and ileal diverticula have a prevalence of 1 to 2% of the population (1). JID arises in 69-80% in the jejunum, 15-20,7% in the ileum and 5-10,3% in both. Ileal diverticula are in general more solitary and smaller than jejunal ones (2). Sixty percent of patients with small bowel diverticula have coexisting colonic diverticula (3).

Pathophysiology

A diverticulum is a pouch structure projecting outward from the gastrointestinal tract and can contain one or more of the bowel wall layers. A differentiation is made between a true and a false diverticulum. A true diverticulum contains all the layers of the normal gastro-intestinal tract, a false is formed because of a protrusion of submucosa and mucosa through a defect in the muscular wall. In general, JID are false diverticula (1). Diverticulosis may be primary (acquired or with underlying visceral myopathy) or secondary (to conditions like M. Crohn, tuberculosis, abdominal surgery). Difference is also made between congenital, like Meckel's diverticulum, and acquired diverticula (6). Different hypotheses exist how JID are formed. One of those points towards an underlying dietary fiber deficiency resulting in abnormalities in intestinal peristalsis, with consecutive pseudo-obstruction and higher intraluminal pressure. Another theory focuses on areas of focal smooth muscle weakness, such as the entry points of blood vessels (6). Yet another theory believes that despite a normal bowel wall anatomy, an abnormal mesenteric plexus can cause smooth muscle dysfunction and uncoordinated peristalsis, with subsequently localized areas of high intraluminal pressure, prone to diverticulum formation (7). Microscopically, three types were found in resection specimens: 1/ visceral neuropathy with axonal and neuronal degeneration; 2/ visceral myopathy with fibrosis and degeneration of smooth muscle cells and 3/ progressive systemic sclerosis with fibrosis and decreased numbers of normal muscle cells (6).

Symptomatology

JID is often asymptomatic, but when symptomatic, it can cause bleeding, bacterial overgrowth, blind loop syndrome, diarrhea, infection, jejunal dyskinesia, chronic diverticulitis, chronic malabsorption or obstruction (1,3). 10-30% of patients have non-specific symptoms

like intermittent abdominal pain, flatulence, diarrhea, and constipation; whereas about 10 percent presents with acute diverticulitis, obstruction, intussusception, gastro-intestinal bleeding, perforation, fistula formation, intra-abdominal abscesses, adhesions, volvulus or peritonitis (2,3). There is a trend towards more bleeding complications and a higher perforation risk in jejunal than ileal diverticula. Inflammation occurs predominantly on the mesenteric side because the false diverticula occur more frequently where vessels enter the bowel wall (2). The most common complication is an uncomplicated diverticulitis, but with lower incidence than in colonic diverticulosis. One of the hypotheses explaining the different incidence is their relative large size and better intraluminal flow of the relatively sterile liquid content of the distal small bowel (8). Jejunoileal hemorrhage is infrequent but can be responsible for massive gastrointestinal bleeding. The cause of bleeding can be either due to diverticulitis with or without ulceration, trauma, irritation, and/or associated congenital arteriovenous malformation (9). Obstructive symptoms can be mechanical or due to functional small bowel pseudo-obstruction. Mechanical causes include compression of inflammatory masses on the small bowel lumen, strictures/adhesions, intussusception, volvulus or impaction of an enterolith in the diverticular lumen. Pseudo-obstruction is probably caused by underlying jejunoileal dyskinesia. If acute pseudo-obstruction occurs, it is not always easy to differentiate from a true mechanical obstruction.

Diagnosis

Radiologic findings

The first radiological diagnosis of JID was reported in 1915 and made on barium contrast studies, but this imaging modality is not used anymore (5,10). Because of the rareness of the disease and the non-specific complaints, ultrasound is the first choice of evaluation. Bowel wall thickening with a hypoechoic rim and hyperechoic center is the most prominent finding. Peridiverticulitis can be seen as a relative hyperechoic appearance of the surrounding fat tissue. Complications such as perforation, obstruction, intussusception and abscesses have their own typical appearance on ultrasound but are not discussed here (4). Because of the low sensitivity of ultrasound, computed tomography (CT) has become the investigation of choice. CT allows a good evaluation of the etiology as well as complications. Administration of oral and intravenous contrast to facilitate the diagnosis is recommended. Oral contrast is helpful to assess bowel wall thickening and intravenous contrast to detect inflammatory changes. Uncomplicated small bowel diverticulosis is seen as focal, mostly multiple outpouchings of the gastro-intestinal tract. Focal bowel wall thickening with inflammation of the surrounding fat is seen in diverticulitis. CT is also highly

sensitive for detecting complications like obstruction, intussusception, hemorrhage, perforation, fistula, intra-abdominal abscesses, adhesions and volvulus (4,5).

Balloon enteroscopy

Diagnosis and treatment of small bowel pathology remain challenging. Single- or double-balloon enteroscopy, in an antegrade or retrograde way, tries to meet this shortcoming (11, 12). In this context, Meckels' diverticulum is the most cited indication (13). Obviously, this technique could be useful in other small bowel conditions and even to perform some therapeutic interventions. Also hybrid approaches (i. e. enteroscopy combined with surgery) are possible (12).

Treatment and management

Treatment and management of complications in JID are in essence not different as diverticulosis elsewhere in the gastro-intestinal tract. Because of more complications in jejunal diverticula, these patients were more often treated surgically than patients with ileal ones (2). If diverticulitis is present, antibiotic treatment is recommended. In the case of serious complications, surgical approach is inevitable. However, resection of small bowel segments must be limited, because diverticula can recur and with large small bowel resections there is a potential risk of a short bowel syndrome (6). In the case of (massive) small bowel hemorrhage, surgical resection is the preferred approach, because of the high incidence of recurrence and mortality (up to 80%) when treated conservatively. Selective mesenteric artery embolization can be a valuable alternative (9). In case of intestinal obstruction, it is important to differentiate between a true (mechanical) or a pseudo-obstruction. Pseudo-obstruction must be managed conservatively, whereas a mechanical obstruction often needs surgical intervention. Patients with chronic pain or malabsorption are usually treated conservatively (eg. with antispasmodics, anti-diarrheal agents, analgesics) (9). If symptoms of bacterial overgrowth are present, there could be benefit of antibiotic treatment (eg. tetracycline, erythromycin) (1). There is no evidence to treat asymptomatic diverticula.

Conclusion

Jejuno-ileal diverticulosis is a rare entity which can cause a variety of symptoms. Therefore, diagnosis is often delayed. Abdominal CT with oral and intravenous contrast remains the golden standard. Balloon enteroscopy could be a valuable alternative in both diagnosis and treatment. Serious complications like intestinal obstruction, diverticular bleeding and bowel perforation often needs surgical intervention. In most cases however, a conservative approach is sufficient.

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