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Case Report

Jejunal diverticular perforation: a masquerader in the elderly during COVID era

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ABSTRACT

Jejunal pseudo-diverticulosis is a rare, acquired condition. In this era of COVID-19 pandemic, although there is insufficient data to suggest causation, gastro-intestinal complications of it have been reported. Being associated with high mortality, our case sheds light onto a potential gastrointestinal manifestation of COVID-19 and implicates the need for a high clinical suspicion of complicated jejunal diverticulosis in the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) positive elderly presenting with acute abdomen, having had long-term non-specific symptoms.

Keywords: Non-specific, Jejunal diverticulum, Gut trophism, Surgical, Mortality

INTRODUCTION

Jejunal diverticulae are fragile herniations through the jejunal muscularis by the mucosa and submucosa at the mesenteric aspect of bowel where the vasa recta penetrate. It is an oft clinically silent entity with a reported incidence of 0.3-2.3%.[1] The remaining cohort exhibit a wide spectrum of non-specific symptoms. However, it is the occurrence of complications as inflammation, haemorrhage, obstruction and in rare cases perforation which makes this condition clinically relevant. Here we report a rare acute presentation of spontaneous jejunal perforation secondary to jejunal diverticulosis during the course of treatment of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) pneumonia in an elderly female.

CASE REPORT

A 70 years old female with no previous co-morbid illness who was diagnosed as COVID-19 positive with 85% lung involvement, under hospital treatment elsewhere for the past 10 days, developed acute abdominal pain for 3 days and was referred to our tertiary care centre. Pain was initially periumbilical and later diffuse, continuous and aching type. It was associated with nausea, obstipation and abdominal distension. On examination, her general condition was poor with tachycardia (118 beats/minute), tachypnoea (20/minute), maintaining SpO_2 of 87% on continuous positive airway pressure ventilation. Abdominal examination revealed generalized abdominal tenderness and distension, guarding and rigidity with absent bowel sounds.

Laboratory investigations revealed gross leucocytosis (40,000 cells/cu.mm) and hypoalbuminemia (2.2 g/dl). Computed tomography imaging of abdomen revealed pneumoperitoneum with air pockets noted in left hypochondrium and free fluid suggestive of hollow viscus perforation.

After adequate resuscitation and obtaining high risk informed consent, patient was taken up for emergency celiotomy. Midline laparotomy revealed multiple jejunal diverticulae 10 cm from duodenojejunal flexure with multiple perforation along the mesenteric border, largest

one measuring 2×1 cm with sloughing of mesentery for about 30 cm. In the view of high surgical risk, patient was treated with resection and double barrel jejunostomy. Despite the intensive post-operative care offered, patient succumbed to progressive respiratory failure and expired on the first post-operative day.

Figure 1: Computed tomography of abdomen showing confluent loculated fluid collections with air pockets and air fluid level in the upper abdominal region in the mesenteric plane adjoining the jejunal region.

Figure 2: Few confluent intra-peritoneal air pockets visualized in the upper abdomen.

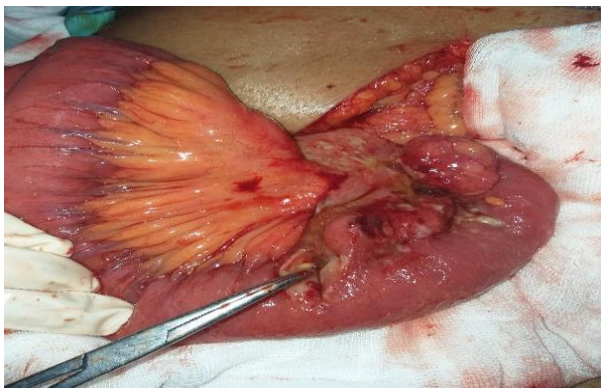

Figure 3: Intra-operative image showing perforated jejunal diverticula and the extensive intra-peritoneal contamination.

Figure 4: Excised specimen.

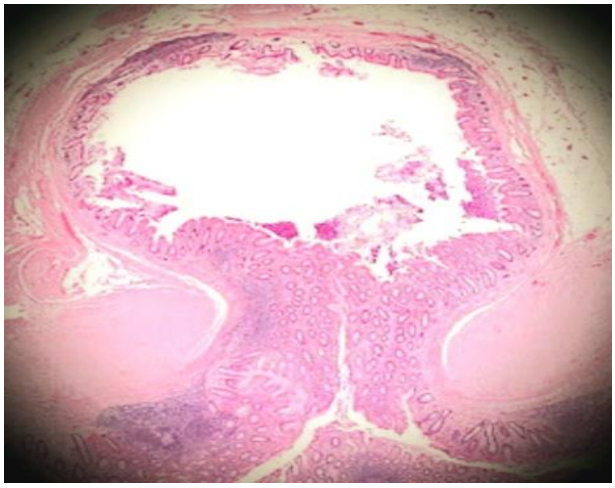

Figure 5: Histopathology image showing perforated diverticular wall with outpouching of mucosa, flattened submucosa and absent muscularis propria, with acute inflammatory infiltrate, serositis and extensive fibrinopurulent exudate.

Histopathologic examination of the specimen revealed perforated diverticular wall with mucosal outpouching, flattened submucosa and absent muscularis propria, with acute inflammatory infiltrates, serositis and fibrinopurulent exudate.

DISCUSSION

Acquired jejunoileal diverticulosis are formed by multiple mucosal and submucosal herniation at the mesenteric aspect where the vasa recta penetrate muscularis propria. Historically, the clinical entity was first described by Sommering and Baille in 1794 and later by Sir Astley Cooper in 1807.[2] It shows a slight male predilection and is seen in 60- 70 years of age. However, our case report is on an elderly female. High intraluminal pressures resulting due to intestinal dyskinesia from smooth muscle and myenteric plexus abnormality along with altered peristalsis is implicated.[3]

From the diagnostic perspective, jejunal diverticulosis is a challenge to the surgical fraternity. In 42% cases, it is silent.[4] Hence, on most occasions, it is an incidental diagnosis from imaging studies, intraoperative findings or during autopsy. Amongst the wide spectrum of manifestations, diarrhoea is the commonest feature; others being intermittent abdominal discomfort and bloating, flatulence, dyspepsia, steatorrhoea.[5]

It is only in 2-6% cases, perforation of jejunal diverticulum occurs.[6] Though uncomplicated jejunal diverticulosis in barium study shows bullion-like-appearance, contrast studies have no defined role in the diagnosis of complications.[7] In the event of perforation, chest and abdominal roentgenogram may show free air under diaphragm. Multidetector computed tomography (MDCT) with oral and intravenous contrast is the preferred imaging study which shows free intra-peritoneal air, localization of extra-luminal air bubbles in close proximity to the bowel wall or contained within interloop abscess, asymmetric bowel wall thickening and surrounding fat stranding. However, this radiologic appearance should also be considered a differential for an underlying perforated necrotic tumour.[8,10] Associated diverticula appearing as discrete air-filled outpouchings with barely discernible wall and devoid of small bowel folds.[9] However often, the diagnosis is made with certainty intra-operatively during surgery.

While, what drives the pathophysiologic process still remains unclear; SARS-CoV2 has been suggested to exhibit tropism towards angiotensin converting enzyme-2 protein found in gastric, small bowel and rectal epithelial cells which could have incited a direct viral insult on the epithelium.[11] In addition, altered bowel motility can result from its neuro-invasive property.[12] Also it's procoagulant nature causes microthrombi and wall necrosis. This with the high dose steroids used in treatment may have had an additive effect which predisposed to perforation.

The mesenteric location of perforation often walls it off resulting in a localized abscess than generalized peritonitis, thus masking the manifestations and delaying diagnosis. In such confounding situations, diagnostic laparoscopy often offers a helping hand. High mortality of about 40% is attributed to delay in diagnosis from vague symptomatology and poor stress responses in the elderly.[14]

Perforated jejunal diverticulitis in a hemodynamically stable patient with local peritonism, can be attempted for conservative management alongside percutaneous computed tomography (CT) guided aspiration of the localized collection thus obviating the need for surgery.[15] In acute pan-peritonitis, emergency exploratory laparotomy is the need of the hour, with segmental bowel resection and primary anastomosis being the preferred management; as simple diverticulectomy is associated with increased anastomotic leakage and fistula formation from devascularisation.[16]

However, in our case the decision to proceed with exteriorization was based on an already impaired hemodynamics and the recognition of the need to minimize further surgical insult, along with the extensive intraperitoneal contamination associated.

CONCLUSION

In an elderly patient, although colonic diverticulitis is almost always suspected in the setting of acute abdomen, jejunal diverticulitis should be considered a difficult differential diagnosis. It also highlights the need for vigilance regarding gastrointestinal symptoms in SARS-CoV-2 patients. Given the rarity and low incidence, a high index of suspicion is needed for early diagnosis and prompt treatment to prevent complications.

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