CASE REPORT

Abdominal pain and faeculent vomiting in a 64-year-old woman

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SUMMARY

A 64-year-old woman with a previous right colectomy presented with severe epigastric abdominal pain and nausea of several weeks' duration, which then escalated to projectile faeculent emesis. During her clinical course, she remained afebrile with normal vital signs. Physical examination revealed abdominal distension, moderate tenderness in the bilateral upper quadrants and provoked voluntary abdominal wall guarding. Haematology and laboratory chemistries were only notable for a mild (14.6 K/ μ L) leucocytosis. Acute abdominal plain radiological series revealed dilated small bowel loops and possible pneumoperitoneum. Abdominal CT demonstrated a mechanical small bowel obstruction and no extraluminal air. An exploratory laparotomy was performed, revealing an obstructing enterolith related to actively inflamed jejunal diverticulitis (complicated JD). This case report aims to describe the non-specific presentation of a poorly understood disease entity that presents a diagnostic and therapeutic challenge for the medical community.

BACKGROUND

Jejunal diverticulosis (JD) is a relatively rare diagnosis, with an estimated prevalence of 0.3–4.5% at autopsy.^{1 2} Complications of JD include diverticulitis, intestinal obstruction, bleeding, viscus perforation and enterolith formation, which are estimated to occur in 6–10% of JD cases.^{1–4} No pathognomonic semiology for jejunoileal diverticular disease has been described. Instead, presenting signs and symptoms are often non-specific and diverse. As such, its diagnosis is primarily made using axial imaging studies. No radiological classification currently exists; however, abdominal CT scans are helpful in detecting complicated JD. Correct recognition of this entity is important as mortality has been reported as high as 40% in presenting patients.⁵

We describe a case of a relatively young and healthy woman who presented with non-specific symptoms of abdominal pain. Initial diagnostic imaging studies were imprecise, revealing possible pneumoperitoneum and probable small bowel obstruction. Intraoperatively, jejunal diverticula were found, showing recent perforation and a jejunojejunal fistula as the possible origin of a distal obstructing enterolith. The disimpacted stone was removed along with the complicated JD segment. Postoperatively, the patient recovered without complication.

CASE PRESENTATION

A 64-year-old woman presented to the emergency department, with severe epigastric abdominal pain, nausea and faeculent vomiting. On questioning, she revealed a several weeks' history of intermittent, migratory epigastric and right upper quadrant pain. This presentation worsened 12 h prior to arrival to the emergency department, with her pain becoming constant and progressively more severe. Additionally, she was reporting projectile, foul-smelling emesis of several hours' duration. Her medical and surgical history was notable for long-standing gastro-oesophageal reflux disease and a right colectomy in 2007 for a large villous adenoma. She denied recent dietary changes, alcohol abuse and non-steroidal anti-inflammatory drug use.

INVESTIGATIONS

On examination, the patient was not in severe distress, being afebrile with normal vital signs and oxygenation. Her abdomen was visually distended with palpable tenderness in bilateral upper quadrants, associated with provoked voluntary abdominal wall guarding. No frank peritoneal irritation signs or masses were discovered. The haematology revealed a moderate leucocytosis to 14.6 K/ μ L with 84% segmented neutrophils, the remainder of her laboratory investigations were normal. An acute abdominal series (abdominal X-ray, AXR) suggested free intraperitoneal air within the left upper quadrant as well as dilated small bowel loops (figure 1). As (1) the patient was haemodynamically stable with an unimpressive physical examination, (2) the site, severity and cause of the likely bowel obstruction were still unclear, and (3) conventional radiography is far less sensitive than CT in the detection of a small pneumoperitoneum,⁶ a contrast-enhanced CT was obtained. The CT results were reported as a small bowel obstruction with significant dilated proximal small bowel with a transition point in the right lower quadrant without evidence of extraluminal free air (figure 2).

DIFFERENTIAL DIAGNOSIS

In this patient's clinical context, a high-grade mechanical small bowel obstruction was our initial working diagnosis. The potential aetiologies for this obstruction included postsurgical bowel adhesions, internal hernia and neoplasm. Bowel adhesions were considered the most likely cause due to her history of a right colectomy.

Other diagnoses that were also considered given her migrating upper hemi-abdominal pain pattern

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Figure 1 Upright chest film demonstrating free intraperitoneal air within the left upper quadrant below the diaphragm.

included acute mesenteric ischaemia, gastrointestinal tract perforation, atypical cholecystitis, pancreatitis and gastroenterocolitis. The initial AXR showed pneumoperitoneum and dilated small bowel loops, further expanding our diagnosis to include small bowel perforation secondary to the small bowel obstruction versus perforated peptic ulcer disease with reactive ileus. Yet there was a puzzling non-correlation between the patient's mild abdominal clinical condition and these radiological findings.

TREATMENT

The patient was started on broad-spectrum antibiotics and taken for emergent exploratory laparotomy. Intraoperatively, many

Figure 2 Coronal view of abdominal and chest CT scan with contrast demonstrating dilated small bowel with an acute transition point in the right lower abdominal quadrant.

duodenal and proximal jejunal diverticula were identified. At 10 cm from the ligament of Treitz, the jejunal mesentery was thickened and severely inflamed, highly suspicious for perforation and jejunojejunal fistula. Several diverticula contained enteroliths, and a 3 cm enterolith was found in the lumen of the distal ileus, causing a mechanical obstruction. Distal to this point, the remainder of small bowel and colon appeared decompressed, and no additional enteroliths were palpated. The offending enterolith was disimpacted and manipulated proximally towards the grossly inflamed jejunal segment, which was then resected and a side-to-side duodenojejunal anastomosis performed (figure 3). The pathology report confirmed jejunal diverticulitis with peridiverticular abscess. Enterolith(s) were not identifiable on retrospective review of axial imaging.

OUTCOME AND FOLLOW-UP

On postoperative day 5, an upper gastrointestinal contrasted radiological series revealed a patent anastomosis without a leak. Duodenal and other jejunal diverticula were radiologically demonstrated and did not show contrast extravasation. A diet challenge was initiated and advancement was tolerated without incident. The patient was discharged home after an uneventful hospital course on postoperative day 8. In the outpatient setting, the patient experienced complete resolution of her symptoms and, 6 months postoperatively, remains without problem.

DISCUSSION

JD is a rarely encountered, often asymptomatic diagnosis. It has a reported incidence rate of 0.3–4.5% at autopsy, affecting elderly men more than women.^{1 2} It is thought that acquired JD arises from abnormalities of intestinal smooth muscle and/or deregulated motility (chronic constipation, systemic sclerosis) leading to weakened bowel wall and increased intraluminal pressure.^{2 7 8} The normal penetration of vasa recta into the intestinal wall causing discontinuity of the small muscle layer in association with intraluminal pressure is the most likely reason why these diverticula originate on the mesenteric border. The association of JD with duodenal and colonic diverticulosis in 30% of cases supports the hypothesis that it is an intrinsic muscular/intestinal wall weakness rather than of a possible intraluminal dietary or pressure aetiology.² The cause of these muscular layer defects is still unknown.

JD is often incidentally diagnosed by CT imaging, small bowel barium radiographic series, or surgery.^{9 10} Most

Figure 3 A 26.5 cm resected proximal jejunum notable for diverticula with inflamed mesentery suspicious for jejunojejunal fistula and the removed 3 cm impacted enterolith.

symptomatic patients present over the age of 60 years,² with non-specific symptoms such as abdominal pain, bloating, nausea, bacterial overgrowth or malabsorption.^{2 8 11} Six to ten per cent of patients with JD may develop complications such as diverticulitis, intussusception, stricture, adhesions, volvulus, bleeding, enterolith formation, obstruction and perforation.¹⁻⁴ When present, perforation is associated with a high mortality rate of up to 40% of patients.⁵

The presence of perforation, obstruction, fistulae and/or bleeding escalates the acuity of JD into the category of complicated JD. No management guidelines for complicated JD exist.⁴ Incidental asymptomatic JD does not require further investigation or specific treatment.^{9 10} During the evaluation for non-specific chronic abdominal pain and/or known pre-existing JD, efforts should be made in obtaining axial imaging.¹¹ Nonetheless, CT scan findings for JD often can be subtle and may be identified only retrospectively.⁸ Enteroliths are rarely identified on radiographs unless they are calcified, and are most often diagnosed at laparotomy.^{3 8} Double-balloon or capsule endoscopy procedures have been used for diagnosis of JD in non-emergency settings.¹¹

Recommendations differ with regard to treatment of complicated JD. Although diverticulectomy has been reported in cases of small bowel obstruction due to enteroliths,^{2 4 7} most clinicians are inclined to perform segmental jejunal resection with primary anastomosis.^{4 8} Resection of the entire segment of bowel containing the diverticula should be attempted. However, if extensive disease is encountered, margins of resection should be limited only to inflamed small bowel in order to avoid short gut syndrome.^{4 10} In the cases of bleeding, angiography can point out the offending diverticula and direct the segmental resection with intraoperative dye.¹²

Long-term follow-up for residual small bowel diverticula has not been reported. As such, no evidence-based recommendations exist for dietary, medical or surgical interventions that decrease the risk of recurrent symptomatic disease.

Patient's perspective

- ▶ I write the following to provide assistance to the case report written about my operation. I was 64 at the time. Early in my career (40 years ago), I worked as a registered nurse so I have some knowledge of the medical field.
- ▶ A couple of days after Christmas, while visiting relatives in another state, I experienced what I thought was a severe bout of heartburn and bloating. This happened in the middle of the night and neither anti-acids nor belching relieved the discomfort. It lasted about 12 h. During the days following this episode, I alternated between feeling fine and feeling bloated, with mild nausea and heart burn. I also had frequent discomfort in my right upper abdomen.
- ▶ When I returned home, I went to my personal physician who began steps to investigate my symptoms. An abdominal ultrasound was done to determine if my discomfort was caused by a gall bladder issue and I had a full blood study done. I was also given a prescription for medication to reduce acid since I had a long-standing history of acid reflux. The ultrasound was negative and the plan then was to give the meds a week to determine if the symptoms were relieved. Despite the medication, my symptoms persisted unchanged with bouts of heartburn with bloating, and mild nausea and discomfort in my right upper abdomen.

- ▶ A couple of days after the ultrasound and after a light lunch, I began to feel nauseated and bloated again. Suddenly I became very ill with severe upper abdominal pain and violently vomited what appeared as brown and faecal smelling stomach contents. I started shaking/shivering uncontrollably and felt too weak to leave the bathroom. I called 911 for assistance.
- ▶ On admission to the ER and after some initial X-rays, it was determined that I had a perforated bowel and that I would be having emergency surgery soon. This was the first time I felt concern about the situation that I faced. I was quite anxious when signing the OR permits because at that time the cause of the problems was unknown and consequently the possible outcomes were also unknown. I was particularly concerned about the possibility that the surgery would result in a stoma.
- ▶ An NG tube needed to be inserted in the ER but I have a nasal deviation and in the past NG tubes had been inserted while I was in the OR. The nurses were unable to insert the tube nasally so it was inserted orally. This was a very difficult procedure for me; and was very uncomfortable. Later it was inserted nasally in the OR. (Throughout my hospital stay, the NG tube caused me some anxiety as I was always concerned that it might not be working correctly and would have to be reinserted without the benefit of the OR.)
- ▶ A number of other tests, X-rays and a CT scan were done while I was in the ER; and eventually I was headed to the OR. When I woke up, I was very happy to hear that no stoma was required and that the cause of my symptoms had been discovered and corrected.
- ▶ The next several postoperative days are a blur. Any pain I had was treated adequately with the intravenous pain medication provided. I did have anxiety about having an upper GI test done as I was concerned that this would make me nauseated. However, the most discomfort I had was dizziness when I had to be in an upright position for the duration of the X-ray.
- ▶ In the days and weeks since the surgery, I have not taken any medication for acid reflux and have had no reoccurrence of any of the symptoms that I had prior to the surgery.

Learning points

- ▶ Complicated jejunal diverticulosis (JD) may present in otherwise healthy, relatively young patients as non-specific and diverse symptoms. It is important to include this diagnosis as part of the differential for unexplained acute or chronic abdominal pain, intermittent small bowel obstruction and non-variceal gastrointestinal bleeding.
- ▶ Diagnosis of JD is primarily radiological rather than clinical.
- ▶ CT scan is the imaging modality of choice for complicated JD. However, it lacks sensitivity as findings may be subtle and only identified retrospectively.
- ▶ Asymptomatic JD requires no further work up or treatment. In contrast, complicated JD where bleeding, perforation and obstruction are the presenting clinical problem(s), should be managed surgically; segmental resection and anastomosis should be attempted.
- ▶ Long-term follow-up for residual small bowel diverticula has not been reported, thus no recommendations can currently be made for dietary, medical or surgical interventions in order to avoid recurrent symptomatic disease.

Competing interests None declared.

Patient consent Obtained.

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