Case Report: Intermittent small bowel volvulus causing severe jejunal diverticulosis

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Abstract

Background
Eosinophilic gastroenteritis (EG) is characterized by eosinophilic infiltration of the gastrointestinal (GI) tract and can present in a variety of ways. We present a case in which EG of the jejunum led to small bowel diverticulosis (SBD) and volvulus requiring surgery.
Case Report
An 83-year-old female with a history of chronic abdominal pain, nausea, and early satiety, presented to our clinic after a thorough GI workup and radiologic diagnosis of partial midgut volvulus. She underwent exploratory laparotomy and was found to have normal rotational anatomy with prominent small bowel diverticulosis. 70 cm of proximal jejunum was resected, encompassing all visible diverticuli, and a primary anastomosis was performed. The patient recovered without complication and had complete resolution of her presenting symptoms.
Conclusion:
We propose that this patient's pathology was caused by chronic intermittent obstructions related to EG, leading to repeated periods of increased intraluminal pressure and severe small bowel diverticulosis. This case highlights the importance of maintaining an index of suspicion for small bowel diverticulosis in the setting of chronic EG.

Case Report

HPI: An 83-year-old Caucasian female was referred to our general surgery clinic for chronic abdominal pain, nausea, early satiety, and weight loss over the past 4 years. She had multiple admissions at various hospitals for partial small bowel obstruction despite not having had previous abdominal surgery. During this time, she underwent several computed tomography (CT) scans, upper gastrointestinal (UGI) contrast studies and magnetic resonance enterography (MRE) studies. Abnormal findings included dilated proximal small bowel to 5 cm, multiple small bowel diverticula, closed loop bowel obstruction, pneumatosis, scattered foci of free air, what appeared to be numerous end to side small bowel anastomoses (in retrospect, large adjacent diverticuli), "swirl sign", as well as partial midgut volvulus, concerning for malrotation (Figure 1). Four months prior to her referral to our clinic, she underwent a diagnostic laparoscopy at an outside hospital for increased abdominal pain with pneumatosis intestinalis and a few small foci of extraluminal air seen on a CT scan of the abdomen and pelvis. At that time, she was found to have no signs of bowel ischemia and the procedure was ended without further intervention. We scheduled the patient for exploratory laparotomy due to her intractable symptoms.
PMH: DM2, atrial fibrillation, hypothyroidism, and eosinophilic gastritis previously treated with corticosteroids.
PSH: tonsillectomy
PE: On examination, she had a soft, mildly tender abdomen without hernia defects, organomegaly or masses.
Procedure: exploratory laparotomy, 70cm jejunal resection with primary stapled anastomosis
Findings: Normal rotational anatomy with prominent small bowel diverticulosis, largely confined to the proximal jejunum (Figure 2).
Post-operative course: Recovered without complication and was discharged on postoperative day six after return of bowel function. Complete resolution of presenting symptoms.
Pathology: Diffuse diverticulosis with prominent transmural eosinophilic infiltrates destroying the bowel wall (Figure 3).

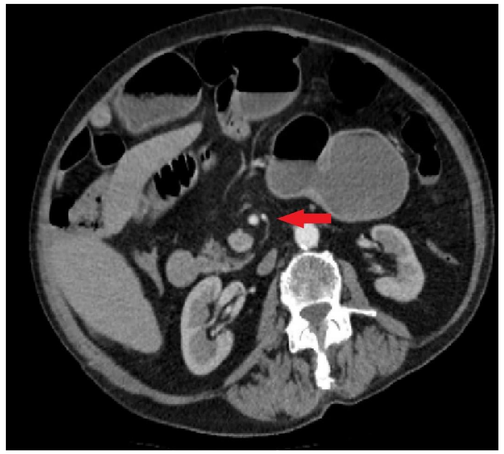


Figure 1 CT showing multiple dilated loops of small bowel and a "swirl sign" (arrow) concerning for midgut volvulus



Figure 2 Gross specimen with near-continuous involvement of the small bowel by consecutive giant diverticula/pseudodiverticula (up to 6.2 cm) arising from the mesenteric border.

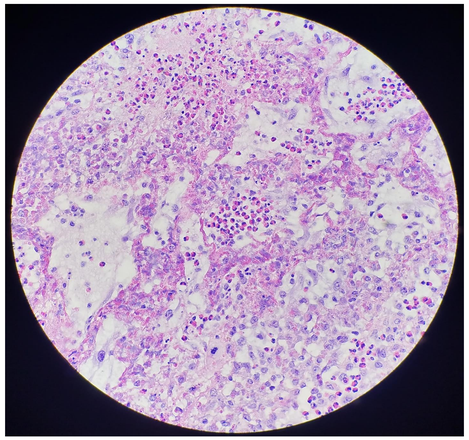


Figure 3 Microscopically, the diverticula show a lack of muscularis propria. There is not prominent crypt loss or crypt destruction, but eosinophils infiltrate the epithelium and deep mucosa, submucosa, and muscularis propria as described in cases of eosinophilic gastroenteritis.

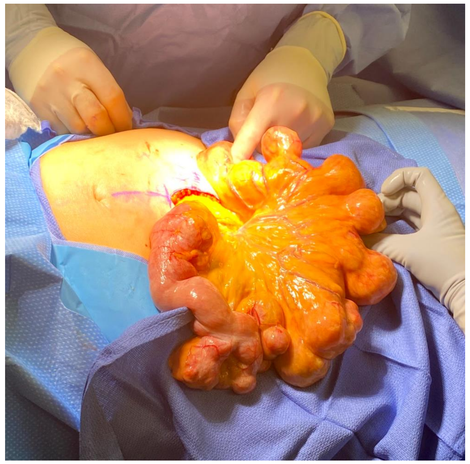


Figure 4 Intra-operative photo of specimen.

Discussion

Small Bowel Diverticulitis

- SBD has a prevalence of 0.03-0.5% [2–4] and jejunal diverticula account for 18-25% of all SBD [5]
- Most SBD are asymptomatic, 4-10% of patients present with chronic nausea, bloating, flatulence, and diarrhea [4,6]
- Diverticulitis, hemorrhage, perforation, obstruction, and volvulus are possible complications [2,4,7,8]
- Symptomatic SBD requires operative treatment [9]

Eosinophilic Gastroenteritis

- EG is a broad classification of disease characterized by selective eosinophilic infiltration of the GI tract in the absence of a stimulatory cause. Evidence that a hypersensitivity reaction may be involved [10]
- EG can affect any age group, and any portion of the GI tract, the stomach and duodenum are most common[1,10]
- Clinical manifestations are non-specific, most frequently consisting of abdominal pain, nausea, and vomiting
- Complications include pancreatitis and mechanical small bowel obstruction
- Treatment of EG is corticosteroids, only rarely requiring surgery for complications
- Its course can be acute, chronic with a relapsing and remitting pattern, or continuous [10]

Proposed Mechanism

- EG caused a chronic partial small bowel obstruction in the proximal jejunum
- This chronic SBO caused high intraluminal pressure, leading to pulsion diverticula
- These in turn acted as mobile masses which predisposed the bowel to torsion
- The resulting intermittent volvulus worsened the obstruction, causing increased proximal pressure, and further expansion of the diverticuli
- Inflammation and scarring from repeated episodes of diverticulitis exacerbated this process

Contributions of this Case

- Diverticulosis of the esophagus due to eosinophilic esophagitis has been reported,[11] but to our knowledge ours is the first report of jejunal diverticulosis associated with eosinophilic gastroenteritis
- This case highlights the importance of maintaining an index of suspicion for complicated jejunal diverticulosis in patients with known EG
- In this case, although initial management without therapeutic operation was successful in treating the emergent abdominal pain, the patient remained symptomatic between episodes, and a definitive resection was necessary
- We recommend that asymptomatic jejunal diverticulosis can be observed, but that symptomatic localized small bowel diverticulosis is best treated with resection of the entire involved portion of the small bowel with primary anastomosis

Conclusion

We present a case of EG leading to symptomatic jejunal diverticulosis which ultimately required surgery. SBD is rare and not known to be commonly associated with EG, making diagnosis challenging. This case highlights the importance of maintaining vigilance when approaching abdominal pain associated with chronic GI disease such as EG as the sequelae may require operative management.

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