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Case Report

Spontaneous small bowel volvulus in young adult male [☆]

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ABSTRACT

Small bowel volvulus is a rare surgical pathology in western countries with a rather misunderstood pathophysiology. This condition refers to the abnormal torsion of the small bowel loops on its mesenteric axis and blockage of the mesenteric vessels, thus leading to bowel obstruction. Typical symptoms include abdominal pain and distention, vomiting and bloody stools. Volvulus can also cause ischemia due to a compromised blood supply. Small bowel volvulus can be life-threatening and require immediate surgery. In this case report, we present a 28-year-old male patient who was admitted to the emergency department with significant, unrelenting abdominal pain and vomiting with no blood. CT scan identified small bowel volvulus and torsion of the mesentery. The biopsy report confirmed no malignancy in this patient. The patient underwent surgery and was discharged 2 days later.

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Background

Small bowel volvulus (SBV) refers to a segment of intestinal loop and the mesentery twisting on itself, thus resulting in mechanical obstruction [1,2]. SBV is a rare occurrence of surgical emergency in western nations but is more common in Africa, India and Iran [3]. There are 2 main categories of volvulus: 1) Primary volvulus of the small bowel, without any identifiable anatomical causes [3] and 2) Secondary volvulus of the small bowel, where the torsion is caused by an abnormal underlying pathology such as adhesion bands [4], tumors [5], Meckel's diverticulum [6] and duplications [7].

SBV represents less than 5% of all intestinal obstructions [8], with nearly 75% of volvulus disproportionately occur-

ring in the colon and 25% in the small bowel [9]. The etiology of primary volvulus of the small bowel and the mechanism of rotation has not been fully elucidated in the literature. However, slackness of the abdominal wall, dietary habits, heavy musculature, absence of mesenteric fat, abdominal trauma, constipation and pregnancy are theorized to potentially predispose one to its onset [3]. Typical symptomatology includes pain, vomiting, abdominal distention, constipation, and bloody stools [10]. Bowel ischemia can also occur due to the mesentery undergoing such significant torsion thus cutting off the blood supply [11]. Although diagnosis of volvulus is clinical, radiological examinations are often essential for confirmation due to similar clinical features with other diseases [12].

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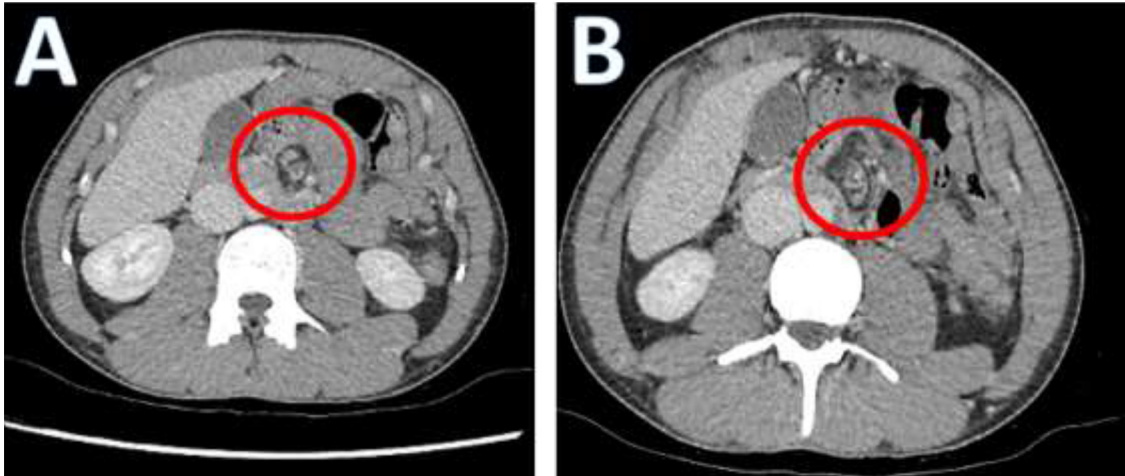


Fig. 1 – (A and B) These images attempt to capture abnormal whorled morphology of the mesenteric vessels of the small bowel (as shown in the red circles). The jejunal loops and mesenteric vessels noted to have mild effacement.

Case report

A 28-year-old man was admitted to the emergency room with epigastric and umbilical abdominal pain and vomiting with no blood. Our patient has a medical history of celiac disease and has not undergone prior abdominal surgery. The patient had normal vital signs except for an increased heart rate (105 bpm). His abdominal examination noted a soft abdomen and was tender over the epigastric and umbilical region. His bowel sounds were present. Our patient proceeded to have a CT scan of his abdomen due to the severe unrelenting abdominal pain despite receiving high doses of ketamine and fentanyl.

The CT scan detected small bowel volvulus and torsion of the mesentery (Fig. 1 and Fig. 2). It demonstrated abnormal whorled morphology of the distal small bowel with mural thickening. There was slight effacement of the jejunal loop, and the superior mesenteric vessels appeared more congested. The patient proceeded to have laparoscopic surgery with adhesiolysis and mesenteric biopsy. Intraoperatively, there was an adhesion band compressing the small bowel mesentery. Another adhesion band was identified compressing the terminal ileum and was freed with diathermy. Our patient had improved small bowel perfusion, with no further obstruction. Abnormal plaques from the small bowel were biopsied and sent for histopathology.

Pathology samples noted mesothelial cells with abundance of macrophages and mixed inflammatory cells with no neoplastic cells. Hence, no malignancy was detected in this patient's biopsy. Our patient experienced no complications post-operation and was discharged after 2 days.

Discussion

Primary SBV is a torsion of a loop of intestine around its mesenteric attachment [1]. The bowel can become ischemic

due to compromised blood supply, thus rapidly leading to bowel necrosis and perforation [1,11].

We present a 28-year-old male patient who was admitted to the emergency department with epigastric and abdominal pain. The CT scan identified SBV and twisting of the mesentery. This patient never had surgery prior to experiencing these symptoms. Histologic evaluation tested negative for malignancy. Following this, the patient underwent laparoscopy and adhesiolysis with no postoperative complications.

The exact underlying cause was difficult to determine, with possibilities including a short mesenteric root with partial volvulus, or less likely, an internal hernia. In the literature, there are a few suggested causes of SBV including diet, heavy musculature, laxity of the abdominal wall and pregnancy [3]. Li et al. conducted a retrospective review of 31 patients and concluded no obvious causes for primary SBV and mentioned the difficulty in diagnosing SBV. It is also known that post-abdominal surgery can increase the likelihood of acquiring volvulus due to the formation of abdominal adhesions [13]. These are bands of scar-like tissue in the abdomen which cause the surfaces of organs and the abdominal wall to adhere together. Consequently, this provides sufficient mobility for intestinal volvulization and bowel obstruction to occur [13]. However, our patient has had no prior history of abdominal surgery.

It should also be acknowledged that this patient has celiac disease. There is some evidence of volvulus in patients with celiac disease, albeit limited [14,15]. On the contrary, Vaez-Zadeh et al. [3] found that a cellulose-rich, high-bulk vegetable diet could potentially be associated with knotting of the gut. In certain areas of Africa and South America, the proportion of people with sigmoid volvulus is significantly higher due to a rich-fiber diet thus resulting in chronically dilated and elongated sigmoid colon [1]. However, in certain Asian countries including Taiwan and Japan, SBV is a rare disease [16,17]. Hence, it is clear that this very conflicting and limited evidence cannot be used to justify our patient's dietary habits to the onset of SBV. However, this does indicate that more evidence-



Fig. 2 – The superior mesenteric veins appeared more congested and could be attributed due to the mechanical effect related to abnormal whorled morphology (as shown by white arrows).

based research is required to determine if such factors such as specific dietary habits could potentiate the likelihood of acquiring SBV in patients.

Conclusion

SBV is a rare disease in western countries with insufficient understanding of the etiology [1]. SBV refers to the abnormal twisting of the small bowel loops on its mesenteric axis thus leading to bowel obstruction [1]. Typical symptoms include abdominal pain and distention, vomiting and bloody stools. We describe a 28-year-old male patient who was admitted to the emergency department with severe, relentless abdominal pain and vomiting with no blood. This patient has a prior medical history of celiac disease and has had no prior abdominal surgery. CT scan identified small bowel volvulus and malrotation of the mesentery. Histologic evaluation confirmed no malignancy in this patient. They underwent surgery and was discharged after 2 days. The exact underlying reason for the onset of SBV in this patient remains unknown. The literature also alludes to the difficulty in diagnosing primary SBV in patients and indicates that more research is required to determine potential contributors of SBV.

Patient consent

Patient has provided written, informed consent for this publication.

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