Small bowel obstruction due to splenosis 30 years after splenectomy

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ABSTRACT

Splenosis is the autotransplantation of splenic tissue into abnormal locations due to trauma or iatrogenically. Usually, this causes no symptoms, but in rare cases the mass effect of the transplanted nodules can cause small bowel obstruction. Resection of the culprit splenic tissue is recommended, but not more extensive dissection of non-involved nodules. Our patient presented at 43 years of age with abdominal pain, distention and bilious vomiting. He had undergone a splenectomy at the age of 13 years due to splenic rupture after a motor vehicle collision. Computed tomography demonstrated a small bowel obstruction with multiple nodules suspicious of splenosis. The obstructing mass and compromised bowels were resected. Final pathology confirmed the diagnosis. Splenosis is an uncommon aetiology of small bowel obstruction and must be considered in patients who had previous splenic trauma or surgery.

KEYWORDS

Small bowel obstruction – Splenectomy – Splenosis – Ectopic spleen

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Background

Splenosis is the presence of ectopic splenic tissue usually developing due to a traumatic break-off of splenic tissue or seeding after splenic surgery, with a high incidence of 60–70% in the latter group. The tissue is present as intra- or extraperitoneal autotransplanted nodules that usually cause no symptoms but can, however, become symptomatic depending on the site of transplantation. We present a rare presentation of splenosis causing small bowel obstruction 30 years post-splenectomy, which required surgical intervention.

Case history

A 43-year-old man with a history of splenectomy at the age of 13 years presented to the emergency department for diffuse abdominal pain, distention, obstipation and multiple episodes of profuse bilious vomiting. Upon presentation, he was haemodynamically stable and afebrile. On physical examination, he had severe abdominal distention, high-pitched bowel sounds, diffuse tenderness and no guarding. The patient's laboratory studies showed leucocytosis with a left neutrophil shift; the remaining test results were all within the normal range. An abdominal x-ray showed small bowel distention with multiple air–fluid levels (Fig 1). Enhanced abdominal computed tomography

was consistent with small bowel obstruction, with a transition zone at the level of the left lower abdominal quadrant suggesting an internal hernia or adhesions. Radiology also noted multiple disseminated nodules compatible with splenosis (Fig 2).

A diagnosis of small bowel obstruction was made. A nasogastric tube was inserted and the patient was prepared for surgery. A midline laparotomy over the old wound scar was done. Severe small bowel dilation was observed with a transitional zone approximately 180cm proximal to the ileocaecal valve (Fig 3). Meticulous dissection revealed an extraluminal mass adherent to the transition point (Fig 4). Excision of the mass with part of the small bowel was followed by end-to-end anastomosis. The patient tolerated the surgery well and was discharged home on the sixth day following surgery.

The pathology report revealed that the adherent mass corresponded to a splenic tissue formed by a white pulp and a red pulp.

Discussion

Splenosis is defined as the autotransplantation of splenic tissue to abnormal locations after splenic injury, be it iatrogenic or traumatic. Ectopic splenic tissue was first described in 1896 by Albrecht in Germany, whereas the

term 'splenosis' was first used by Buchbinder and Lipkoffin to describe their findings in 1939.¹ The usual sites of transplantation are the abdominal and pelvic cavities in locations such as the omentum, serosa, parietal peritoneum and under-surface of the diaphragm.² Less frequently, splenosis has been described throughout the body in thoracic, subcutaneous, renal, hepatic and intracranial locations, presumed to be secondary to hematogenous spread.

It is thought that the seeding process begins after spillage of the damaged splenic pulp into the adjacent cavities, and the subsequent number of nodules is related to the severity of the splenic injury and the amount of tissue released.^{2,3}

The interval between splenic rupture and the diagnosis of splenosis varies from 5 months to 32 years, with an average of 10 years after splenectomy.⁴ The true prevalence is probably greater than that reported in the literature since many patients who undergo splenectomy after splenic rupture never have another abdominal operation or post-mortem examination.³ In addition, those who had a minor splenic injury might not even require surgery. The rate does not appear to be related to the delay between splenic rupture and splenectomy nor the amount of intra-abdominal bleeding encountered during surgery.³

Splenosis rarely causes symptoms and the implants are usually found incidentally during abdominal surgery for unrelated conditions.⁵ Symptomatic splenosis can present as pain secondary to tissue infarction, gastrointestinal bleeding or mass effect, which includes hydronephrosis, increased abdominal girth and small bowel obstruction.

Figure 1 Abdominal x-ray showing small bowel distention with multiple air-fluid levels

Figure 2 Abdominal computed tomography with intravenous contrast showing the mass causing small bowel obstruction (1), dilated proximal small bowel loops (2) and splenosis distributed in the abdomen (3)

Figure 3 Dilated proximal small bowel loops

Nevertheless, splenosis is historically an uncommon aetiology for small bowel obstruction, and to the best of our knowledge, only seven reported cases of small bowel obstruction were directly attributable to splenosis.⁵ In many reports, splenosis is implicated in small bowel obstruction but is actually due to adhesions that develop at sites of serosal injury from trauma.⁴

Splenic implants seem to draw their blood supply from surrounding tissue, and their sizes can range from a few millimetres up to 7cm, but they rarely grow beyond 3cm due to their limited blood supply.⁵ Macroscopically, they can be sessile or slightly pedunculated, reddish in colour, and can be found scattered throughout the entire peritoneal cavity, ranging from a few to 300 in number.⁴

Splenic nodules are often first seen on imaging incidentally, but these modalities cannot always determine the splenic origin of the tissue. Magnetic resonance imaging can provide a higher specificity compared with computed tomography. Nuclear scintigraphy using heat-damaged red blood cells tagged with technetium-99 is now the gold standard for diagnosis because of the high uptake of damaged erythrocytes by ectopic splenic tissue.² The autotransplanted splenic tissue of splenosis is thought to perform a normal splenic function, and therefore Heinz and Howell-Jolly bodies may be absent on a peripheral smear despite these patients having a history of splenectomy. Some studies show that the risk of overwhelming post-splenectomy infection tends to be lower in splenectomies due to trauma than in elective cases, raising the possibility of a preserved immunological function in splenosis.¹

Splenosis should be suspected in patients with a history of splenectomy presenting with abdominal pain or a recurrence of the haematological disorder for which the spleen was removed.⁵ There is still no consensus as to what should be done when it is encountered incidentally, but it would be rational to excise nodules that can be removed easily or implants located on the bowel serosa that may be a source of future small bowel obstruction.^{3,5}

Figure 4 Intraoperative image showing splenosis adhering to the small bowel causing the obstruction (1) and dilated proximal small bowel loops (2)

Nevertheless, it is neither indicated nor always possible to excise all the nodules observed.

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