

Persimmon Phytobezoar as the Cause of Small Bowel Obstruction

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The most common cause of small bowel obstruction is intra-abdominal adhesions resulting from previous abdominal surgery, and persimmon phytobezoar as the cause of small bowel obstruction is rare. We report a 47-year-old male patient with a history of previous gastric surgery, who visited our emergency room because of increasing abdominal pain, distension and episodic vomiting for one day. Small bowel obstruction secondary to intra-abdominal adhesion was initially suspected but was later diagnosed by abdominal CT as an obstructing phytobezoar in the ileum. This diagnosis was confirmed by exploratory laparotomy. Early identification and surgical intervention are considered necessary to prevent ischemia and perforation of the small bowel.

Key words: phytobezoar, persimmon, small bowel obstruction

INTRODUCTION

Bezoars can be classified based on their origin as phytobezoars (undigested vegetable or fruit fibers), lactobezoars (undigested milk), pharmacobezoars (medications), or trichobezoars (hair). Phytobezoars are the most common form and the type most often found in patients who have had previous gastric surgery, who have poor dentition, and who have a suggestive history of increased fiber intake¹. The most common cause of small bowel obstruction (SBO) is intra-abdominal adhesions due to laparotomy, accounting for 66-75% of cases². Phytobezoar as the cause of SBO is an uncommon entity in patients who are operated on for SBO. The reported incidence ranges from 2-8.5%³⁻⁴. Here we describe a case of SBO caused by a persimmon phytobezoar, emphasizing the association between previous gastric surgery and phytobezoar, and discussing the clinical symptoms and management.

CASE REPORT

A 47-year-old male visited our emergency room because of increasing abdominal pain, distension and episodic vomiting over the course of one day. Three years prior, he had undergone truncal vagotomy, antrectomy, and Billroth I gastroduodenostomy because of gastric ulcer with obstruction of the gastric outlet. Physical examination revealed normal vital signs, a distended abdomen with diffuse moderate tenderness, and no evidence of peritonitis. Hematologic values were normal except for a white blood cell count of 17,000/mm³ with a predominance of neutrophils (89%). Blood chemistries were normal. A plain abdominal film revealed gas-filled dilated loops of the small bowel. On the basis of the history of previous abdominal surgery and plain radiograph findings, a diagnosis of intestinal obstruction caused by intra-abdominal adhesions was made. He was started on intravenous fluid replacement and nasogastric suction, but the clinical symptoms did not improve.

A subsequent contrast-enhanced computed tomography (CT) of the abdomen showed diffuse dilated small bowel loops and an ovoid intraluminal mass containing mottled gas within the ileum at the site of obstruction (Fig. 1), suggesting a bezoar. Upon further questioning, the patient admitted eating several persimmons about one week prior to this admission. With this information added to the patient's prior surgical history and CT results, small bowel obstruction secondary to phytobezoar was

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Fig. 1 Coronal contrast-enhanced CT shows dilated small bowel loops and an ovoid intraluminal mass (arrow) with mottled gas pattern characteristic of bezoar. Small bowel obstruction caused by a phytobezoar was confirmed at surgery.

considered.

A laparotomy was done, and a stony hard mass firmly fixed within the lumen of the ileum about 120 cm proximal to the ileocecal valve was palpated. Because the phytobezoar could not be crushed to milk it forward, enterotomy with extraction was performed (Fig. 2). No other concurrent gastrointestinal phytobezoar was found. The patient had a good postoperative recovery and was discharged under normal ingestion on the seventh postoperative day.

DISCUSSION

Phytobezoars are concretions of poorly digested fruit or vegetable fibers, mainly persimmons. Persimmons, especially when unripe, contain a large amount of a soluble tannin called “shiboul”. Izumi reported that the soluble tannin monomer polymerizes on contact with dilute hydrochloric acid in the stomach to form a sticky coagulum, a tannin-cellulose-hemicellulose-protein complex⁵. Phytobezoars are most commonly found in patients with previous gastric surgery that has resulted in impaired gastric emptying and/or decreased acid production⁶. In addition, diabetes mellitus has been reported as a predisposing factor because of autonomic neuropathy and gastroparesis⁷.



Fig. 2 A phytobezoar measured 6 × 3 × 3 cm.

Gastric phytobezoars may cause dyspepsia, food intolerance, abdominal pain, nausea, vomiting, pyrexia and bleeding from the gastric ulcer⁸. Treatment is either by endoscopic removal with a snare or stone baskets⁹, dissolving therapy such as acetylcysteine¹⁰ and Coca-Cola lavage¹¹, or a combination of the two. Surgical gastrotomy is usually reserved for cases in which these conservative treatments are ineffective.

Mechanical intestinal obstruction may be caused when gastric phytobezoars pass into the small bowel. However, it is difficult based only on the clinical signs and physical examinations to differentiate SBO secondary to phytobezoars from similar conditions secondary to adhesion. CT is useful in making the diagnosis of phytobezoar associated with SBO, and specific CT signs and findings characteristic of phytobezoars have been reported^{4,12}. Furthermore, Ho et al.¹³ reported that CT imaging performed early in these high-risk patients with phytobezoar formation contributes to reducing unnecessary delays before appropriate surgical intervention. Thus, SBO secondary to phytobezoar was diagnosed with certainty in our patient when CT demonstrated an intraluminal mass containing mottled gas within the ileum. Surgical intervention was indicated with the purpose of milking the phytobezoar into the large bowel without enterotomy, or extraction of the phytobezoar via an enterotomy when milking it forward has failed⁸. An important aspect of surgery is to explore the entire gastrointestinal tract to exclude the presence of other phytobezoars.

In conclusion, although intra-abdominal adhesions are the most common cause of SBO in patients with previous gastric surgery, phytobezoars resulting in SBO should be considered as a differential diagnosis, especially in persimmon season (winter and spring). Prevention of phyto-

bezoar formation depends on appropriate dietary advice to patients undergoing gastric surgery or vagotomy. Careful history taking and a high index of suspicion in patients with previous gastric surgery may avoid delayed diagnosis and treatment.

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