Inflammation and obstruction of the small intestine due to phytobezoar

Van Trung Hoang (✉ dr.hoangvantrungradiology@gmail.com)

Thien Hanh Hospital <https://orcid.org/0000-0001-7857-4387>

The Huan Hoang

Thien Hanh Hospital

Ngoc Trinh Thi Pham

The University of Danang

Vichit Chansomphou

Savannakhet Medical-Diagnostic Center

Duc Thanh Hoang

Walter Reed National Military Medical Center

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Abstract

Background: Bezoar bowel obstruction is a rare entity and remains difficult to detect on imaging studies. Recognition of its characteristic imaging pattern will be useful for diagnosis and management in the setting of intestinal obstruction.

Case presentation: We report a 68-year-old female patient who was admitted to the hospital with signs of intestinal obstruction including abdominal pain, nausea, vomiting, and abdominal distention. She was diagnosed with phytobezoar small bowel obstruction on computed tomography (CT) imaging. The patient underwent surgery to confirm the diagnosis and subsequently recovered well.

Conclusions: Bezoar is indicated by the sign of floating fat-density debris sign on CT images. It needs to be differentiated from small-bowel feces sign in intestinal obstruction.

Background

Bezoars refer to an intestinal mass in the gastrointestinal tract due to the concretion of substances that are indigestible when ingested, such as fibers, vegetables, fruits, hair, or foreign bodies [1, 2]. They usually involve the stomach, but they can move to the small intestine and cause an obstruction [3]. Bezoar-associated small bowel obstruction remains an uncommon diagnosis and they are often not properly diagnosed on image studies yet [4]. We report a case of inflammation and obstruction of the small intestine due to phytobezoar. Thereby, we briefly present clinical manifestation, image features, and management of bezoar. Recognition of its imaging pattern would be useful for the management of this entity in the setting of intestinal obstruction.

Case Presentation

A 68-year-old female patient presented with worsening abdominal pain, nausea, vomiting, and distention three days prior to admission. Patient reports a history of high-fiber diets without sufficient chewing. Physical examination revealed hallmarks suggestive of bowel obstruction including colicky abdominal pain, nausea, vomiting, abdominal distension, a cessation of flatus and bowel movements. Ultrasound showed edematous loops of the bowels. CT images showed several dilated loops of the bowel and an inflamed bowel loop with a thick wall (Fig. 1). In the transitional zone of intestinal obstruction, there was a well-defined region mottled with air bubbles and fat-density debris floating (Fig. 2). The findings showed a mottled gas pattern representing the bezoar. The patient underwent open surgery and the cause of intestinal obstruction was determined to be phytobezoar (Fig. 3). The patient recovered well and was discharged 10 days postoperatively.

Discussion

The incidence of intestinal obstruction due to bezoars is precisely unknown; however, the literature described an incidence of approximately 0.4–4% [5]. There are 5 types of bezoars: phytobezoars of

vegetable and fruit residues; trichobezoars consist of hair; lactobezoars from dairy products; pharmacobezoars from medications; and polybezars from ingested foreign bodies [6]. Bezoars may be formed due to a high-fiber diet (persimmons, celery, grape skins, pumpkins, prunes), inadequate mastication (dental problems, the elderly), hasty swallowing, reduced gastric motility (previous gastric surgery, vagotomy, diabetic autonomic neuropathy, hypothyroidism, Guillain-Barré syndrome, myotonic dystrophy, impaired gastrointestinal tract passage, medications slowing gastrointestinal motility), and pyloric dysfunction (pyloroplasty and antrectomy), etc [5–7]. Bezoar can be determined on CT scan with “floating fat-density debris” sign [7]. Bezoars need to be distinguished from small bowel feces by using a soft-tissue window setting to detect fat-density debris. On ultrasound, bezoars appear as a hyperechoic arc-like surface mass with posterior acoustic shadow and twinkling artifacts [8].

The initial treatment of bezoars is intestinal decompression and fluid-electrolyte replacement. Its location should be considered when choosing the intervention procedure. If the location of bezoar is in the stomach, the endoscopic method of choice includes mechanical disintegration and chemical dissolution. If the location of bezoar is in the duodenum, jejunum, or ileum, laparoscopic or open surgery is considered. For complicated cases, stoma or anastomosis procedures can be performed with segmental small bowel resection [7–10].

Conclusions

Bezoars need to be differentiated from small-bowel feces for the reasonable management of bowel obstruction. On CT images, bezoars are indicated by the sign of floating fat-density debris. Bezoars show a hyperechoic arc-shaped structure with a strong posterior acoustic shadow on gray-scale ultrasound and twinkling artifacts on Doppler ultrasound.

Availability Of Data And Materials

All data is available based on a reasonable request.

Declarations

Acknowledgements

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Funding

Not applicable.

Ethics declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Patient included in this case report gave written informed consent to publish the data contained within this study.

Competing interests

The authors declare that they have no competing interests.

Abbreviations

CT

Computed tomography

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Figures

Figure 1

(A) Non-enhanced CT showed several dilated loops of bowel with the largest diameter being 37 mm (arrowhead). (B) There was an inflamed bowel loop with a wall thickness of about 20 mm (arrow). Note that the cause of intestinal obstruction was the bezoar located in the transitional zone of the jejunum (circles).

Figure 2

(A) Non-enhanced CT image with window width and window level settings at 400 and 40 showed the intraluminal focal oval area mingled with feces-like material that is unable to distinguish between bezoar and small-bowel feces. (B) After setting the window width and window level at 500 and -120 to distinguish between air density and fat density, the lesion showed mottled with air bubbles and fat-density debris floating in the bowel lumen at the transitional zone. It exhibited the sign of “floating fat-density debris” representing bezoar.

Figure 3

Photograph of the surgical specimen showed a phytobezoar measuring 3 x 4 cm.