



Beyond the Usual Diet: A Challenging Case of Xylophagia Resulting in Intestinal Obstruction From Xylo bezoar

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ABSTRACT

Xylo bezoar is indeed a rare condition associated with xylophagia, characterized by varying degrees of intestinal obstruction due to the entrapment of undigested paper in the gastrointestinal tract. Xylophagia is a form of pica that primarily affects children from low socioeconomic backgrounds with mental conditions and nutritional deficiencies. It is rarely seen in adults. Medical and endoscopic interventions are often challenging in these patients, and surgical intervention is often required. We present an endoscopically challenging case of pancolonic obstruction due to toilet paper accumulation in a patient with pica secondary to iron deficiency anemia.

KEYWORDS: xylo bezoar; xylophagia; colonic obstruction; constipation

INTRODUCTION

Bezoars are accumulation of indigestible material, such as hair, medications, and vegetable matter, in the gastrointestinal tract.¹ Symptoms such as abdominal pain, nausea, vomiting, constipation, fever, and weight loss are nonspecific for bowel obstruction, and the lack of specificity makes the diagnosis complex because of the low incidence of bezoars.² Intestinal obstruction is noted in approximately 60% patients with bezoars.³ Xylophagia is a form of eating disorder known as pica, which involves the consumption of paper.⁴ Pica is characterized by persistent eating of non-nutritive substances such as earth, ice, hair, and paper. Pica is linked to iron deficiency, zinc deficiency, mental retardation, schizophrenia, and developmental disabilities.⁴ It is culturally acceptable and is not considered pathological in certain ethnic populations.⁵ We report a clinically and endoscopically challenging case of a patient with xylophagia who presented with abdominal pain and constipation, likely secondary to xylo bezoar, complicated by intestinal ischemia and perforation.

CASE REPORT

A 61-year-old woman with a pertinent history of iron deficiency anemia presented with sharp, crampy, left lower quadrant abdominal pain and constipation for 2 days. The risk factors of constipation include a medication history of iron tablets for iron deficiency anemia and hydrocodone-acetaminophen for osteoarthritis. She did not have any other known medical or psychiatric conditions. The family informed that the patient has been consuming some amount of toilet paper for many years, and she started eating almost half a roll of toilet paper every day for the past 3 months and was diagnosed with xylophagia. Vitals were stable on presentation. Laboratory test results are presented in Table 1. The initial physical examination was benign, with mild generalized abdominal distension and tenderness in the left lower quadrant. An abdominal x-ray showed a large colonic stool burden without perforation. Abdominal-pelvic computed tomography with contrast revealed sigmoid colitis with moderate-to-severe colonic fecal loading. She received a full MiraLAX bowel preparation and 2 soap suds enemas, but there was no bowel activity. The decision was made to proceed with a colonoscopy to assess for bowel obstruction and possible malignancy in anticipation of potential surgery. As a precautionary measure, she was intubated for the procedure. An esophagogastroduodenoscopy was performed to evaluate for iron

Table 1. Pertinent laboratory values on admission

| Laboratory test | Result | Reference |
|-------------------------------|----------------------------|--------------|
| Hemoglobin, g/dL | 7.8 | 12–16 |
| Hematocrit, % | 27.1 | 36–48 |
| MCV, fL | 57.7 | 80–100 |
| Iron, $\mu\text{g}/\text{dL}$ | 11 | 60–170 |
| Ferritin | 11 $\mu\text{g}/\text{dL}$ | 12–300 ng/mL |
| Iron saturation | <8 ng/mL | 15%–50% |
| Transferrin, mg/dL | 368 | 200–360 |
| TIBC, $\mu\text{g}/\text{dL}$ | 515 | 250–450 |
| Nucleated RBC, % | 3.9 | 0–0.5 |

MCV, mean corpuscular volume; RBC, red blood cell; TIBC, total iron-binding capacity.

deficiency anemia and upper gastrointestinal obstruction first, revealing mild antral gastritis. The colonoscopy, using a pediatric colonoscope, revealed a xylobezoar in the rectum with a significant amount of toilet paper material, but no stool, malignancy, inflammation, or stricture was observed at the sigmoid colon or the rest of the visualized colon. Much of the toilet paper from the left colon was lavaged using sterile water and removed. The scope could not be advanced beyond the hepatic flexure because of significant colon distention and poor visualization. The examination was ultimately aborted because of worsening abdominal distention and respiratory decompensation. No obvious luminal perforation was observed in the visualized parts of the colon. A nasogastric tube was inserted, and a chest x-ray showed a large pneumoperitoneum under the right hemidiaphragm, suggesting perforation likely due to ischemia and necrosis secondary to severe colonic obstruction. She underwent an emergent subtotal colectomy with ileostomy, which was complicated by severe hemorrhage. During the emergent surgical exploration, severe necrotic right-sided and cecal ischemia was observed. An extensive amount of toilet paper was removed from her small intestine and colon. Tissue

examination confirmed ischemic colitis in the transverse colon and cecum, along with cecal perforation. Unfortunately, the patient experienced a cardiac arrest and did not survive (Figure 1).

DISCUSSION

According to the DSM-5 criteria, pica is defined as the consumption of non-nutritive, non-food substances over a period of at least 1 month. The behavior must not be inappropriate for the child's developmental stage, socially normative, or culturally acceptable.⁵ Pica is more frequently observed in children from a lower socioeconomic class who are mentally or developmentally challenged.⁶ The Latin term "pica" refers to the magpie bird, which is known to eat indiscriminately whatever it finds.⁷ Risk factors of developing pica include stress, low socioeconomic status, nutritional deficiency, pregnancy, child neglect, epilepsy, underlying mental disorder, or familial psychopathology.⁵ Low levels of serum iron/ferritin have been associated with pica based on numerous population-based studies.⁵ A study of 55 patients with iron deficiency anemia due to gastrointestinal blood loss showed that 32 patients (58%) had pica, with 28 patients exhibiting pagophagia (a craving for ice).⁸ There are several forms of pica, including pagophagia (ice), geophagia (clay), amylophagia (starch), xylophagia (paper), stachtophagia (cigarette ashes), and cautoxyreophagia (burnt matches).⁷ Exposure to the ingested substances can lead to a wider range of toxic effects due to the presence of lead, mercury, arsenic, fluoride, and other harmful substances.⁵ If left undiagnosed for a long term, pica can lead to complications such as bowel obstruction, bezoars, and toxicity. Several cases of bowel obstruction, perforation, and ulcers due to pica have been reported.⁵

Our patient presented with xylophagia, leading to constipation due to a colonic xylobezoar, which is rarely reported in the literature. While the stomach is the most common site for bezoars, they can rarely occur in the colon, causing intestinal obstruction.⁹ The patient had severe iron deficiency anemia before the onset of pica because she was taking iron tablets

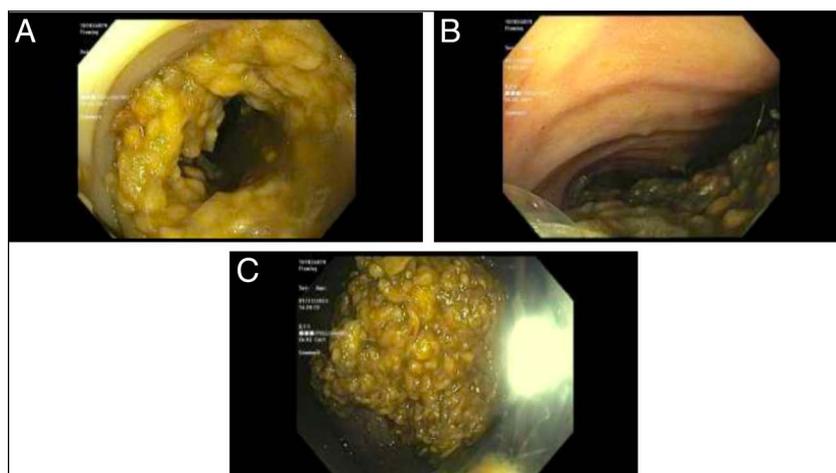


Figure 1. Endoscopic images showing toilet paper in the sigmoid colon (A) and transverse colon (B) and xylobezoar in the rectum (C).

before starting toilet paper ingestion. Abdominal computed tomography with contrast with a sensitivity of 90% and specificity of 57% in detecting bezoars is the gold-standard test for diagnosing bezoars and bowel obstruction. It also aids in distinguishing other bowel masses, ascites, bowel wall thickening, intestinal infarction, and lumen dilation.² Treatment options for bezoars include chemical dissolution using substances such as cellulase, papain, and acetylcysteine; endoscopic retrieval; or surgery. One study has reported successful treatment of xylobezoar with nasogastric infusion of Coca-Cola.¹⁰

In conclusion, our case report highlights the challenges and complexities involved in managing a rare case of xylobezoar-induced pancolonic obstruction in a patient with pica secondary to severe iron deficiency anemia, ultimately resulting in a fatal outcome. It underscores the importance of increased awareness, early intervention, and interdisciplinary management in such cases.

DISCLOSURES

Author contributions: All authors contributed to the conception and design of the study. Consent from the patient's family was obtained by Y.R. Shah. Clinical care was provided by Y.R. Shah, R. Mansour, and G. Krishnamoorthy. Material preparation was provided by R. Mansour and G. Krishnamoorthy. The first draft of the manuscript was written by Y.R. Shah and P. Narsapuram, and all contributors commented on the previous version of the manuscript. All authors read and approved the final manuscript. Y.R. Shah is the article guarantor.

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Informed consent was obtained for this case report.

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