

Terminal ileum perforation secondary to an impacted phytobezoar: case report and review of the literature

Perforación del ileon terminal por un fitobezoar impactado: reporte de caso



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ABSTRACT

Bezoars are concretions of undigested food particles, medications, milk formulas and hair. The most common presentation of a bezoar is in the form of a phytobezoar, which is caused by precipitation of undigested particles of vegetables and seeds. Small bowel obstruction is mainly caused by adhesions from previous surgery. Of all causes of intestinal obstruction, phytobezoars are responsible for only 0.4-4 % of all causes. They are mainly precipitated by previous strictures caused by surgery, partial gastrectomy, Crohn's disease or intestinal tuberculosis. Symptoms can range from a vague abdominal discomfort to nausea, early satiety, vomiting, halitosis and weight loss. Perforation is a rare complication in an intact abdomen because patients seek early medical treatment before this occurs. We describe the case of an 85 year old male patient, who presented with perforation of the terminal ileum, caused by an impacted phytobezoar and caused a localised abscess that was successfully treated with surgery.

KEY WORDS

Bezoar

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Enterolith
Enteric Perforation
Foreign Body
Intestinal Obstruction

RESUMEN

Los bezoares son concreciones de porciones de alimento no digerido, medicamentos, fórmulas de leche o cabello. La presentación más común del bezoar es en la forma de fitobezoar, el cual es causado por la acumulación de partículas sin digerir de verduras y semillas. La obstrucción del intestino delgado es causada principalmente por adherencias de anteriores cirugías. Los fitobezoares son responsables de sólo 0,4-4 % de todas las causas de obstrucción intestinal. Tales obstrucciones son principalmente provocadas por estenosis anteriores secundarias a cirugía, gastrectomía parcial, enfermedad de Crohn o tuberculosis intestinal. Los síntomas pueden variar desde una molestia abdominal vaga hasta náuseas, saciedad precoz, vómitos, mal aliento y pérdida de peso. La perforación es una complicación poco frecuente en un abdomen intacto, porque los pacientes buscan tratamiento médico temprano antes de que esto ocurra. Se describe el caso de un paciente de 85 años de edad, que se presentó con perforación del íleon terminal, causada por un fitobezoar impactado que le causó un absceso localizado, el cual fue tratado con éxito mediante cirugía.

PALABRAS CLAVE

Bezoar
Enterolito
Perforation intestinal
Cuerpo extraño
Obstrucción intestinal

INTRODUCTION

Bezoars are concretions of substances that can't be digested by normal means and can occur in any segment of the gastrointestinal tract, most commonly in the stomach. They can be composed almost by any substance such as hair, pills, seeds and undigested vegetables. Bezoars form in the majority of cases in patients with altered intestinal motility and in patients with previous intestinal surgery and can be classified in four types depending on their origin and components: trichobezoar, phytobezoar, lactobezoar and lactobezoar (table 1) (1,2).

Phytobezoars are the most common form of bezoars in humans and are primarily formed in the ileum, especially in the presence of strictures caused by Crohn's disease, intestinal tuberculosis, previous surgery or even form inside diverticulae. They can also occur in the stomach by the concretion of poorly digested fruit and vegetable fiber predisposed by disturbed gastric motility and decreased acidity in patients after a gastrectomy or vagotomy, and by autonomic intestinal dysmotility in diabetic patients. They are mainly composed of cellulose, hemicellulose, tannins and lignin which can be found in foods such as celery, raisins, prunes, grape skins and most notably persimmons. In high concentrations these foods form a coagulum that upon exposure to an acidic environment begin the formation of a bezoar (4-6).

The most common factors predisposing to the formation of bezoars include previous surgery such as partial gastrectomy and vagotomy and previous small bowel surgery. Medical causes are also associated with this presentation such as hypothyroidism, Guillain-Barre syndrome, diabetes mellitus, cystic fibrosis and psychiatric illnesses with trichophagia (table 2) (7,8).

Clinical manifestations of phytobezoars include chronic indigestion and early satiety and chronic abdominal pain. The most common clinical presentation is a vague epigastric or lower ab-

dominal discomfort. Other symptoms include dysphagia, anorexia, halitosis and weight loss. Of all causes of intestinal obstruction, of which the most common are adhesions. Phytobezoars account only for 0.4-4 % of all causes and rarely cause perforation. Diagnosis of phytobezoars can be difficult at times, depending on the level of impaction. Clinical examination may reveal a mass at the site of impaction. Plain abdominal

films may only show unspecified loops of dilated bowel, and barium studies may show a filling defect as the barium surrounds the bezoar. If the impaction occurs in the stomach, gastroscopy is the method of choice and can be used as a treatment strategy to either fragment or retrieve the bezoar. Abdominal CT scanning has proven useful especially to detect the presence of localised obstruction or perforation (9,10).

Table 1. CLASSIFICATION OF BEZOARS

Type of Bezoar	Description
Trichobezoar	Hair bezoar, in psychiatric patients who ingest hair, carpet, rope.
Phytobezoar	Composed of nondigestible food particles such as cellulose, hemicellulose, lignin.
Lactobezoar	Milk concretions especially in newborns with undigested highly concentrated milk formula
Pharmacobezoar	Conglomeration of medications such as extended release products and laxatives
Others	Ascaris worms, Trichophytobezoar, Diospyrobezoar (Persimmons)

Table 2. PREDISPOSING FACTORS FOR BEZOARS

Predisposing factor	Description
Gastric Surgery	Partial gastrectomy, vagotomy
Neurologic	Guillan-Barre, miotonic dystrophy
Endocrine	Diabetes mellitus, hypothyroidism
Others	Cystic fibrosis, intrahepatic cholestasis, renal failure, psychiatric illnesses

We present the case of an 85 year old male patient admitted to hospital with a diagnosis of peritonitis caused by a perforated intestine. During laparotomy the cause was found to be an impacted phytobezoar at the terminal ileum with perforation of the adjacent ileum and abscess formation.

CASE PRESENTATION

An 85 year old male patient was admitted to the emergency department with a three day history

of progressive, severe right iliac fossa pain and partial constipation. Previously, he had been suffering of intermittent and self-limiting abdominal pain in the same region. The past medical history included non-insulin dependent diabetes mellitus, chronic atrial fibrillation, hypertension and aortic stenosis with an 80mmHg gradient.

On clinical examination he was dehydrated, with an irregular tachycardia at 103 bpm and normotensive. His abdominal examination revealed a tender, immobile mass in the right iliac fossa. The rest of his examination revealed an ejection

systolic murmur, normal respiratory findings and no neurological deterioration. Blood tests revealed a high C-Reactive Protein (313.9 mg/L) in the presence of normal leucocytic count, haemoglobin and serum electrolytes. A plain abdominal film was obtained, which showed small bowel loop dilation with collapsed large bowel and a

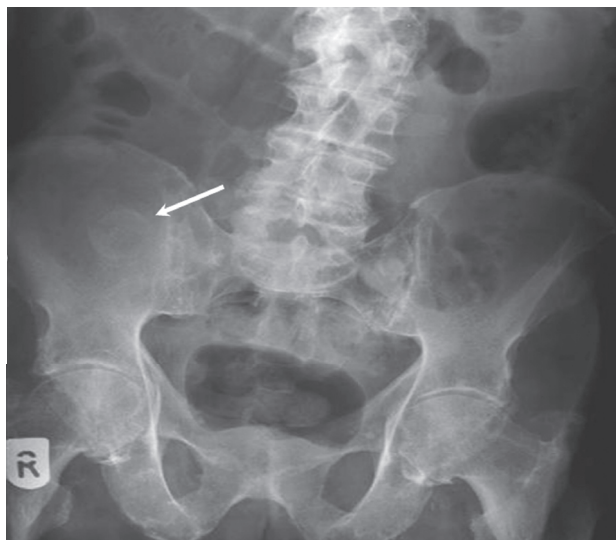


Figura 1. PLAIN ABDOMINAL X-RAY OF THE ABDOMEN SHOWING DILATED LOOPS OF SMALL BOWEL

Conservative management was initiated with alimentary rest, intravenous fluids and antibiotics, but his signs developed into peritonitis of the abdomen. The patient was taken for a laparotomy, which revealed an abscess in the right paracolic gutter involving the caecum and the terminal ileum. On inspection of the lumen a 3 x 3 cm enterolith was found impacted in the ileo-caecal valve causing perforation. A limited right hemicolectomy was performed and sutured with an end to end anastomosis. The patient recovered uneventfully and was discharged after seven days. Histological analysis revealed a phytobezoar, with chronic inflammation of the terminal ileum and caecum. No malignancy or other anatomical anomalies were found.

rounded, radio-opaque shadow projected over the right ileum (Fig 1).

An abdominal CT scan revealed thickening of the terminal ileum, surrounding free peritoneal fluid and a calcified mass in the lumen. The rest of the abdomen was reported as normal. (Fig 2)

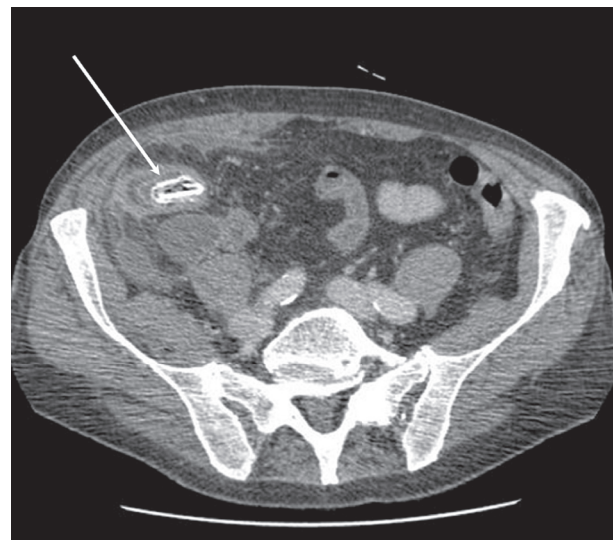


Figura 2. CONTRAST ENHANCED CT SCAN OF THE ABDOMEN SHOWING A CALCIFIED MASS IN THE DISTAL ILEUM CAUSING OBSTRUCTION

DISCUSSION

The prevalence of bezoars is largely unknown due to the vague clinical presentations especially for a high incidence of sub-diagnosis of the disease. From a surgical point of view, obstruction of any part of the gastrointestinal tract caused by a Bezoar is rare, accounting for only 0.4 to 4 % of all causes of abdominal obstruction. Perforation of the small bowel is even rare because patients usually seek medical advice early in the presentation before this complication occurs. This presentation and perforation of the terminal ileum secondary to a bezoar has been only reported in very few cases (1,2,8).

Typically, the presentation is of a small bowel obstruction that fails to resolve with conservative management. The most common site of obstruction and perforation described in the previous reports, in the absence of any other anatomical precipitants is at the ileo-caecal valve. From our review of articles as far behind a 1993, there are only 17 case reports of obstruction caused by bezoars precipitated by different causes. In one of the larger series of cases by Dirican et al (11) they describe the surgical management of 24 patients in a period of 10 years. The most common cause of obstruction was an impacted bezoar at the site of previous gastric surgery (83.3 %).

In this report, it was clear that CT scanning of the abdomen was able to identify the bezoar causing the obstruction in all patients. Other causes for precipitating obstruction have been described such as a bezoar impacted in strictures caused by Crohn's disease, (10,12-14); there are two case reports of bezoars causing ileus and obstruction in a Meckel's diverticulum and a Jejunal diverticulum (in 3 cases) (15-17), and more recently there is a case report by Wilhelmi MH et al. of a phytobezoar in a "healthy adult with a long year history of vegetarian lifestyle" (18).

Perforation of the small bowel caused by an obstructing bezoar is very rare, finding only three reports in the literature since 1993 (19-21). The most plausible explanation for this, is that patients usually seek early medical advice due to the obstructing symptoms, and these perforations occur more due to the impaction of the bezoar and perforation by erosion of the intestinal wall rather than directly through the pressure build up from the obstruction, which is the mechanism underlying the perforation in our case report.

Diagnostic modalities include clinical examination which may reveal a mass in the affected segment in about 30 % of cases, a plain abdominal film which shows only in half of the cases a radio-opaque shadow at the site of obstruc-

tion with proximal bowel dilatation. Ultrasound has been evaluated and can be a useful tool in detecting bezoars especially if they are calcified (22). This method, however, is subject to the expertise of the sonographer and the high index of suspicion for the differential diagnosis. More recently, CT scanning of the abdomen reveals more precisely the cause of bowel obstruction with a higher sensitivity and specificity in different case reports (11,23).

Details of the different treatment methods are beyond the scope of this case report but briefly, for bezoars located in the stomach, endoscopic fragmentation or retrieval is the standard treatment. In the cases presenting with distal bowel obstruction and perforation, a laparotomy or a laparoscopic enterotomy is the only available treatment method (10). At operation, patients should be thoroughly assessed for diverticulae and especially strictures associated to Crohn's disease, and tissue samples must be obtained for definitive diagnosis. In our case no anatomical cause was found for the perforation on laparotomy. The presence of the bezoar could only be explained by the patient's diabetes and gastric dysmotility and simple impaction in the ileocaecal valve which unfortunately led to perforation of the small bowel. At present only dietary recommendations are made for the long term prevention of this disease.

CONCLUSIONS

Obstruction of the small intestine by a phytobezoar is a rare presentation of bezoars of the alimentary tract, but no uncommon, and should be part of the differential diagnosis especially in patients with known predisposing factors. CT scanning of the abdomen remains the most reliable method for diagnosing the presence of a phytobezoar in the digestive tract. At present, surgery remains the mainstay of treating effectively an impacted phytobezoar of the small bowel with or without perforation.

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