Dissolution of pharmacobezoar using carbonated beverage

Harikumar R, Pramod Kunnel, Sunilraj R

Department of Gastroenterology, Century Hospital, Alapuzha, Kerala, India

Bezoars are concretion of undigested material found in the upper alimentary tract, particularly the stomach. Physiologic disturbances such as gastrointestinal dysmotility or anatomical derangements have been described as contributory in most cases of pharmacobezoars. Gastric pharmacobezoars can be treated with endoscopic fragmentation or surgery. Gastric lavage with carbonated beverage has been successfully used to treat gastric phytobezoars. We report a 67-year-old man with pharmacobezoar successfully treated by infusion and intrabezoar injection of carbonated beverage. Subsequent endoscopy revealed an underlying adenocarcinoma in the stomach.

Indian J Gastroenterol 2008 Nov-Dec; 27: 245-246.

Pharmacobezoars are rare and can cause abdominal pain, nausea and vomiting. They can also produce signs and symptoms from liberation or absorption of medications within them.1,2 Many patients with pharmacobezoar have risk factors2 that may have contributed to bezoar formation such as alteration in the gastrointestinal anatomy, dysmotility and peculiarity of certain medications/tablets.

Case Report

A 67-year-old man was brought with history of repeated bouts of vomiting with blood-tinged vomitus. For the past couple of months, he had been complaining of anorexia and early satiety. He had been on 12 medications for coronary artery disease, diabetes, hypertension and COPD, as advised by the cardiologist. On examination, there was an ill-defined mass in the left upper quadrant with minimal oblique mobility. Upper GI endoscopy revealed reflux esophagitis (Los Angeles Grade C). The volume of the stomach was small. There was a firm to hard round ball, measuring approximately 8 cm X 6 cm, gray in color, consisting of tablets of varying sizes, some intact and firmly cemented together (Figure 1). The distal surface of the ball, seen with the patient in head-low position and retroflexing the scope, was hard and showed tablets jutting out; the proximal surface was firm and doughy at places. The tablet ball could be moved using biopsy forceps, and was occluding middle part of the stomach.

All attempts to remove the bezoar using endoscopic polypectomy snare, biopsy forceps and extraction basket failed. We decided to attempt dissolution of the bezoar with carbonated beverage since there is anecdotal evidence of this procedure.3-6 With intermittent infusion of Coca-cola (Hindusthan Coca-cola beverages private limited, New Delhi) through the nasogastric tube, the surface of the bezoar softened on the third day. Repeated injections of Coca-cola on the exposed surface facilitated breaking the bezoar into small fragments, which were retrieved using a biliary stone extraction basket (MSB-3X6, Wilson Cook, USA). In addition, the patient brought out some material by vomiting.

After removal of the bezoar, endoscopy showed a constriction in the mid body of the stomach; the mucosa adjacent to the constriction was hard, indurated, and friable with minimal nodularity (Figure 2). Biopsy from the nodular mucosa showed adenocarcinoma. The patient underwent partial gastrectomy and gastrojejunostomy.
Dissolution of pharmacobezoar with cola

Discussion

Our patient had been on 12 medications and the anatomical derangement which predisposed to bezoar formation was constriction of the mid body of the stomach due to malignancy. Gastric pharmacobezoars may be treated by endoscopic methods. If the bezoar is small, fragmentation can be performed with a large polypectomy snare.\textsuperscript{7} In our case, the bezoar was larger than the jumbo oval snare (3 cm X 6 cm), and could not be caught with a basket.

For phytobezoars, \textit{Coco-cola} infusion/injection and lavage with enzymes, papain and pineapple juice have been employed.\textsuperscript{3,4,11} None of these techniques are described for the treatment of pharmacobezoar. We employed \textit{Coca-cola} injection into the tablet mass with which the mass could be disrupted in 48 hours. Our previous experience of attempted dissolution of a trichobezoar using \textit{Coco-cola} had failed, and the patient required surgery.\textsuperscript{10}

The method of infusion and dosage of carbonated beverage has varied in previous reports. Ladás \textit{et al} lavaged \textit{Coca-cola} through a nasogastric tube. They recommended that a large volume of the beverage, nearly 3 liters, be used and the lavage be performed over 12 hours.\textsuperscript{4} Lee \textit{et al} reported 2 cases of phytobezoar that were treated with oral administration of \textit{Coca-cola}.\textsuperscript{11} These two patients drank 700–800 mL of coca-cola daily for two months, after which complete dissolution of phytobezoar was achieved. Our patient was diabetic, therefore oral administration of \textit{Coca-cola} continuously for 2 months was not feasible. We opted for an intermediate rate of infusion of 200 mL every 4–6 hours, keeping the patient on sliding-scale insulin.

The mechanism of action of carbonated beverage is not well understood. Acid is important in digesting fiber content. \textit{Coca-cola}, which has an acidic pH of 2.6, may help in dismantling the fiber scaffolding of bezoars.\textsuperscript{3,4,11} Fiber interlacing is probably present in pharmacobezoar also, though it is a major component in phytobezoar. It is believed that the NaHCO$_3$ contained in \textit{Coca-cola} has a mucolytic effect.\textsuperscript{4} Furthermore, the penetration of CO$_2$ bubbles into the substance of bezoars may help in disruption (mechanical effect following endoscopic injection).\textsuperscript{6}

In conclusion, pharmacobezoar although rare, can form in individuals who take several medicines in tablet form. People with multiple co-morbidities are prone, especially if there are anatomical or physiologic derangements of the upper GI tract. Pharmacobezoars may be effectively treated with endoscopic methods including injection/infusion of acidified, aerated drinks.

References


Correspondence to: Dr Harikumar, Consultant Gastroenterologist, Century Hospital, Chengannur 689 505, Alapuzha District, Kerala, India. Fax: 0479-2468709
E-mail: harikumnair@yahoo.co.in
Received April 21, 2008. Accepted August 30, 2008