Occupational exposure to wood dust.

Esophageal and Small Bowel Obstruction by Occupational Bezoar: Report of a Case

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Abstract

A 70-year old male is presented suffering from esophageal and small bowel obstruction, caused by an occupational bezoar. The patient has worked as a carpenter for 35 years. Ten years before the incident he underwent pyloroplasty and vagotomy. The part of the bezoar, which caused the esophageal obstruction was removed during endoscopy, while the part of the small bowel was treated surgically. The patient recovered well and was discharged on the 8th postoperative day. The study presents a rare case of intestinal obstruction (esophageal and small bowel) caused by an occupational bezoar in a patient with a previous gastric surgery.

Introduction

Phytobezoar causing bowel obstruction in patients with previous gastric surgery is a well known late complication, although very rare. It is a concretion of food fibers (fruit and vegetable fibers) or foreign bodies in the stomach.[1] The stomach is the most common place of bezoar formation. In a normal stomach vegetable fibers can not pass through the pylorus; they undergo hydrolysis within the stomach, which softens them enough to go through the small bowel. After gastric surgery, because the gastric motility is disturbed, the gastric acidity is decreased, and the stomach may rapidly empty, there is an increased possibility for bezoar formation, causing acute abdomen due to small bowel obstruction.

Reports of bezoars causing obstruction of the gastrointestinal tract exist since the late 18th century.[2] Mir and Mir[3] reported on 22 cases of bezoar found in the literature from 1966 to 1973. Most case reports refer to bezoars of food with fibers or foreign bodies. Moseley[4] reported the first case of a phytobezoar (citrus, onions, mushrooms) following pyloroplasty and vagotomy.

There have not been incidents of occupational reason. The reverse migration of the bezoar to the esophagus is also very rare, and may occur after persistent vomiting and bezoar fragmentation.[5,6] In this paper, the case of a patient with a phytobezoar of occupational origin is presented. The patient suffered from both esophageal and small bowel obstruction.

Case report

A 70-year old male carpenter, who complained about dysphagia for several days, and epigastric pain, nausea and vomiting for 24 hours, was admitted to the Department of Internal Medicine. He had worked as a carpenter for 35 years, only occasionally using

personal protective equipment. Ten years before the incident, he had undergone cholecystectomy, pyloroplasty and vagotomy.

Plain x-ray and ultrasonography of the abdomen was performed after admission with no diagnosis. A chest x-ray and pulmonary function tests were normal. Vomiting continued and dysphagia got worse. The patient then underwent upper gastrointestinal endoscopy as an alternative for diagnosis. The endoscopy (Olympus GIF-V2, Olympus Optical Co. Ltd., Tokyo, Japan) of the esophagus showed a foreign body (dimensions: 1.5cm long, 2.8cm in diameter), which was endoscopically removed using a dormia basket (Fig. 1).

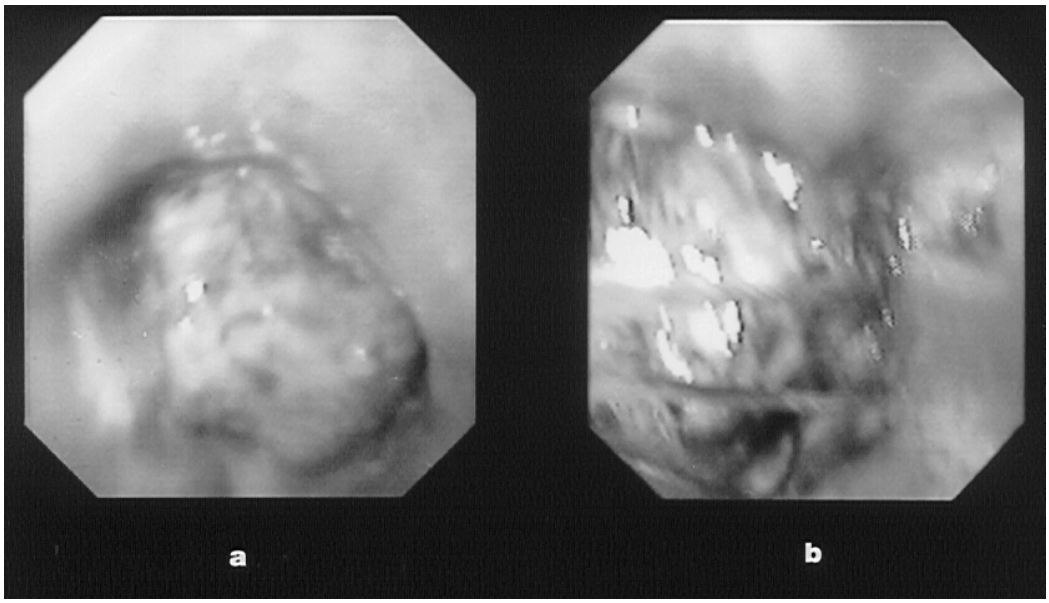

Figure 1. Endocopy: (a) obstruction of the lower third of the esophagus due to a bezoar; (b) removal of the esophageal bezoar with a Dormia-basket.

Further endoscopic examination to the second part of the duodenum revealed no pathological findings. Pathological examination reported that the removed foreign body consisted of wood dust (Fig. 2a).

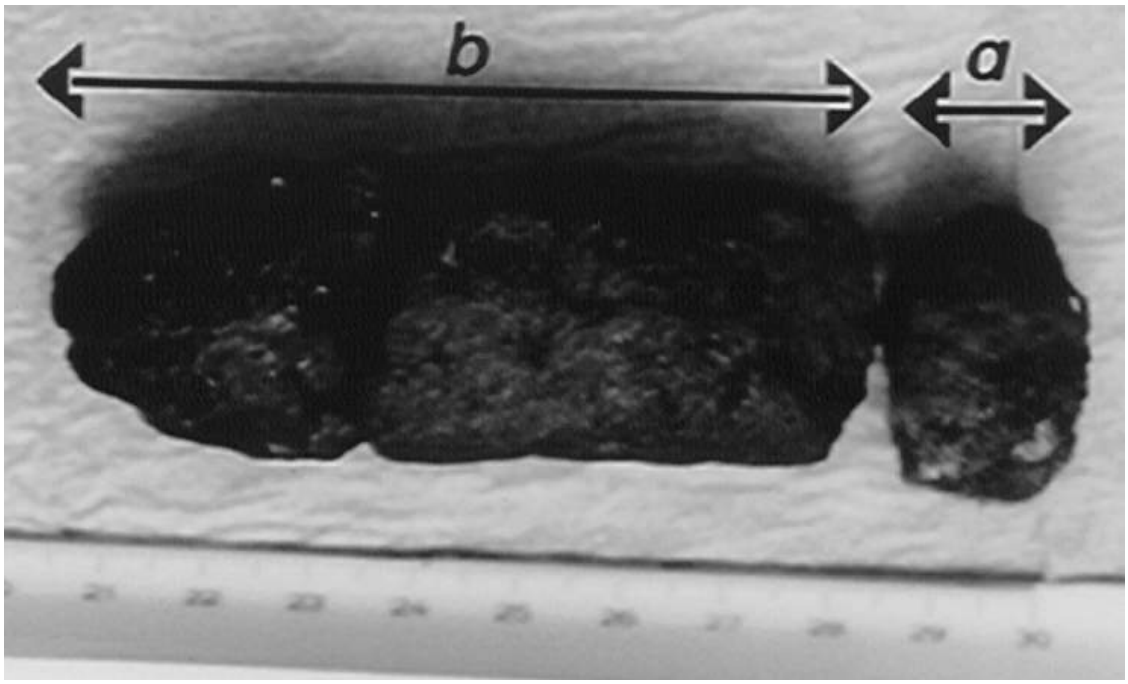

Figure 2. The entire bezoar: (a) esophageal; (b) intestinal.

The patient's condition improved only partially after endoscopy, so he was kept in the hospital for further examination. Few days later he felt abdominal pain and a new x-ray of the abdomen showed dilated gas-filled loops of the small bowel with no air in the colon, suggesting small bowel obstruction. He was then transferred to the surgical clinic for further treatment. His condition worsened the following days and the bowel obstruction could not be managed with conservative treatment, so the patient underwent exploratory laparotomy. The laparotomy revealed a swollen small bowel all the way almost till the end of the ileum. A solid palpable mass (dimension 9.0cm long, 2.9cm in

diameter) was found close to ileocecal valve. Enterotomy was performed and the mass was removed (Figs. 3 and 4)

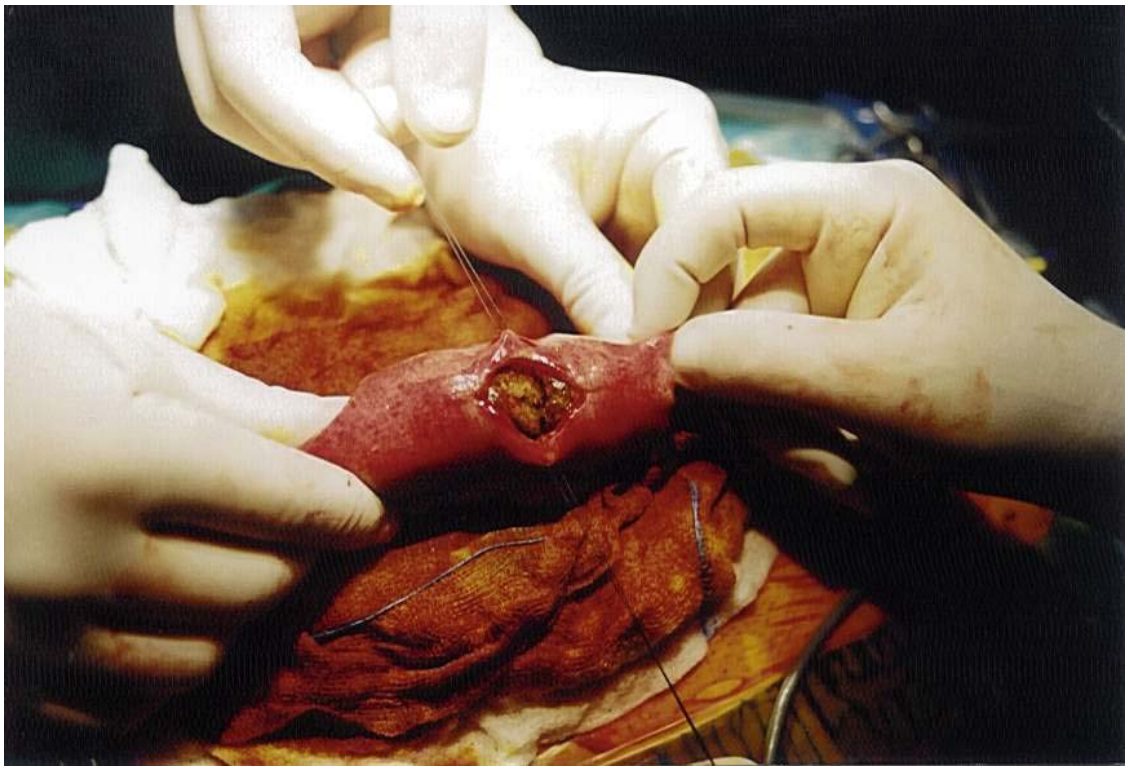

Figure 3. Enterotomy.

Figure 4. Removal of the intestinal bezoar.

and sent to the pathologist. The pathology report revealed the same composition with that of the foreign body removed from the esophagus (Fig. 2b). The patient was discharged on the 8th postoperative day. Eighteen months later the patient is doing well.

Discussion

Intestinal obstruction due to phytobezoars (food, vegetable fibers, and/or foreign bodies) is rarely encountered in adults with a normal intestinal tract. Phytobezoar usually is a cause of intestinal obstruction in patients with previous vagotomy and drainage or gastric resection.[1,3,4] Most of the bezoars that have been presented in the literature are concretions of poorly digested food, which are usually formed initially in the stomach; a fragment of them may migrate in the bowel and cause obstruction.[1,2,4] The two usual sites of the obstruction are in the ileum and the jejunum; it is unusual the reverse migration of the bezoar to the esophagus, as it occurred in our patient.[5,6] Some factors seem to be responsible for bezoar formation. The risk factors that explain the etiology and pathogenic mechanisms in patients with pyloroplasty - vagotomy include: (1) decreased secretion of hydrochloric acid and reduced peptic activity; (2) decreased gastric motility (atonic stomach); and (3) occupational exposure.[1,2,4]

In cases the bezoar is located in the esophagus and the stomach, there should be an attempt to first treat it conservatively.[3] If the bezoar is causing acute intestinal obstruction there is indication for surgical treatment.[1,3,4] In our patient the cause of the bezoar was the accumulated wood dust (occupational bezoar) in the stomach and the previous gastric surgery. The bezoar had two different final locations, one in the esophagus and the other in the small bowel. The initial mass was probably in the stomach, and due to the continuing vomiting, the bezoar was fragmented. The fragments migrated causing obstruction in two different locations in the intestinal tract. The tail of the bezoar moved to the esophagus, while the rest from the stomach through the pylorus (because of the previous pyloroplasty and vagotomy) moved to the small bowel. Two

different therapies were used to treat this occupational phytobezoar, namely endoscopy and surgery.

This is a rare case of bezoar causing two obstructions, nearly simultaneously in the same patient. To our knowledge this is the first case of an occupational bezoar consisting of wood dust. The patient only occasionally used personal protective equipment in his work, and during the month before the incident, he had worked around twelve hours per day. The use of personal protective equipment is imperative to avoid serious health problems to the worker.

In conclusion, since occupational bezoars may be a cause of intestinal obstruction (esophageal and/or small bowel), patients who have undergone a previous gastric surgery should avoid certain kinds of fiber in their diet, and also avoid similar occupational exposures.

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Απόφραξη οισοφάγου και λεπτού εντέρου σε ξυλουργό οφειλόμενη σε φυτοπίλημα επαγγελματικής αιτιολογίας

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Φυτοπιλήματα προκαλούντα αποφράξεις της γαστρεντερικής οδού αναφέρονται από τον 18ο αιώνα. Τα περισσότερα περιστατικά που αναφέρονται στη σύγχρονη βιβλιογραφία δημιουργούνται από τρόφιμα πλούσια σε φυτικές ίνες καθώς και ξένα σώματα.

Εβδομηντάχρονος άνδρας προσήλθε στο τμήμα επειγόντων περιστατικών του Γενικού Περιφερειακού Νοσοκομείου Αλεξανδρούπολης παραπονούμενος γιά επιγαστρικό πόνο, ναυτία, έμετους και δυσκαταποσία. Γιά τη συμπτωματολογία αυτήν εισήχθη στην Παθολογική λινική. Απλή ακτινογραφία κοιλίας και υπερηχογράφημα δεν βοήθησαν στη διάγνωση.

Η κλινική εικόνα παρουσίασε σταδιακά επιδείνωση και ο ασθενής μεταφέρθηκε στη Χειρουργική κλινική.

Από τα στοιχεία του ιστορικού προέκυψε ότι ο ασθενής εργαζόταν ως ξυλουργός γιά 35 έτη, χωρίς να λαμβάνει ατομικά μέτρα προστασίας κατά την εργασία του, παρά μόνο περιστασιακά.

Ο ασθενής προ δεκαετίας είχε υποβληθεί σε χολοκυστεκτομή, πυλωροπλαστική και βαγοτομή.

Κατά τη διάρκεια διαγνωστικής ενδοσκόπησης, εντοπίσθηκε ξένο σώμα Το τμήμα του φυτοπιλήματος που προκαλούσε την οισοφαγική απόφραξη εξαιρέθηκε, ενώ το υπόλοιπο τμήμα του φυτοπιλήματος στο λεπτό έντερο αφαιρέθηκε χειρουργικά. Η παθολοανατομική μελέτη έδειξε ότι και στις δύο περιπτώσεις τα φυτοπιλήματα αποτελούνταν από σκόνη ξύλου. Ο ασθενής επανέκαμψε και έλαβε εξιτήριο την 8η μετεγχειρητική ημέρα. Δεκαοκτώ μήνες μετά η κατάσταση του ασθενούς παραμένει καλή.

Στη βιβλιογραφία δεν αναφέρονται φυτοπιλήματα επαγγελματικής αιτιολογίας, γι'αυτό και θεωρείται ότι το περιστατικό που αναφέρεται στην ανακοίνωση αυτήν είναι εξαιρετικά σπάνιο. Επίσης είναι εξαιρετικά σπάνιο από φυτοπίλημα να προκληθούν δύο αποφράξεις του γαστρεντερικού συστήματος στον ίδιο ασθενή.

Η αναφορά του περιστατικού αυτού, επιβεβαιώνει την αναγκαιότητα της λήψης ενδελεχούς ιστορικού και τη σημασία του επαγγελματικού ιστορικού. Επίσης, με τη λήψη προληπτικών μέτρων προστασίας κατά την εργασία είναι δυνατό να αποφευχθούν περιστατικά, όπως το παραπάνω, που απαιτούσε χειρουργικές δράσεις.