“Jodhpur Bezoar”: Giant Polyurethane Bezoar

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Abstract Acute upper gastrointestinal obstruction due to foreign body ingestion is rare (<6 % of all small intestinal obstruction). Bezoars tend to grow slowly and only thereafter cause obstruction, if any. Rapid formation of a bezoar within hours of ingestion of the offending substance is a unique entity. Here, we present a case of a 22-year-old Indian male who was brought in the emergency department with history of ingesting chemicals used for refrigerator insulation, with suicidal intent. Within hours, he was operated for suspected perforation. And on the operation table, we came across surprisingly a cast extending from the whole of the esophagus to as far as 2 ft of proximal jejunum! Probably the first of its kind ever known! And no breach in the gut could be found in spite of free gas under the dome of diaphragm, probably due to the chemicals sealing the rent as it solidified!

Keywords Bezoar • Lithobezoar • Polyurethane • Cast • Small intestine obstruction

Case Report

We report a case of a 22-year-old Indian male working in a deep-freeze factory, who presented 3 h following

ingestion of two liquid chemicals, known to him, with suicidal intent. He was severely nauseating and having severe abdominal pain. Vomitus contained only saliva admixed with trace of blood probably due to retching. On examination, his pulse was 92/min and blood pressure was 136/82 mm of Hg. There was a dome-shaped bulge in epigastrium, non-tender, hard in consistency, incompressible, and dull on percussion. Gastric lavage failed as Ryle's tube could not be passed.

Routine investigations showed the following: Hb 15, TLC 25000, neutrophils 77 %, blood sugar (random) 362, blood urea 39, serum creatinine 1.49, serum uric acid 8.19, SGOT 40, SGPT 49, S. total bilirubin 1.42, S. Na +146, S.K. +4.3, ECG within normal limits.

X-ray abdomen showed a grossly distended stomach shadow which occupied almost the entire film and was homogeneously radiolucent. There was gas under the right dome of the diaphragm. This aroused the doubt of a cast, which might be expanding, and the gut wall giving way.

The implicated chemicals were brought. There were two distinct liquids, which on mixing, showed exothermic reaction, and formed an expanding foamy solid in 5–10 min assuming the shape of the container.

Patient was taken for emergency exploratory laparotomy (Fig. 1). No free fluid was found in the peritoneal cavity, suggesting that the cast might have sealed the perforation. The whole of the stomach, duodenum, and proximal 2 ft of jejunum were distended and spongy hard in consistency, and their shape could not be molded. Longitudinal anterior gastrotomy was done and the gastric cast, including the entire esophageal cast, was retrieved in toto (Fig. 2). Another incision was given over jejunum at the distal end of the cast.

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Fig. 1 Casts retrieved in laparotomy

Remainder of the cast was retrieved in fragments by digital manipulation. Patency of bowel was checked thoroughly. Ryle's tube was introduced to check the patency of esophagus. Gastrotomy tube was placed. Two abdominal drains were placed: one in the pelvis, another posterior to the stomach. Both incisions were closed in two layers. Other intra-operative findings included patchy ischemic pre-gangrenous changes in gastric mucosa. Pancreas showed similar changes due to pressure effects. Other organs were apparently normal.

Patient recovered well post-operatively. He tolerated orally well, and was discharged on post operative day 26.

Fig. 2 Gastric lithobezoar with esophageal extension

Discussion

Bezoars are concretion of poorly digested eaten substances. They are usually of plant origin (phytobezoars), or less commonly hair, as seen in young females or psychiatric patients (trichobezoars). Other known bezoars include lactobezoars (milk), pharmacobezoars (drugs), or lithobezoars (stones) [1–3]. In our case, it was a lithobezoar formed of polyurethane. Polyurethane is a foamy solid substance used as insulator and is formed on reaction of two distinct liquid chemicals, an isocyanate and the other, a polyol. Only a few cases of polyurethane lithobezoar have been reported in the past. Sudden formation of a bezoar is a rarity (acute formed bezoar). We found a description of a 44-year-old Irish male who developed small intestinal obstruction following migration of a small bezoar after 6 weeks of ingestion [4].

Bezoars are known in population prone to eating indigestible substances (pica). Predisposed cohorts include children, psychiatric patients, alcoholics, drug addicts, and iron-deficiency anemic [5].

Bezoars usually form in the stomach [6], and tend to grow slowly over time. Only occasionally, a small bezoar may pass through the pylorus into the small intestine [7].

Traditionally, bezoars are managed conservatively, followed by planned endoscopy or surgery if needed [8]. A complicated case with perforation, hemorrhage, or obstruction may need an urgent surgical intervention. Gastric bezoars are usually managed by longitudinal gastrotomy and removal. Few complicated cases need resection.

Conclusion

Ingestion of harmful substance with suicidal intent usually present with toxicity. The offending substance causing gastrointestinal obstruction and no toxicity, is not a commonly encountered clinical scenario.

Bezoars tend to grow slowly over months and years, and only then, present with symptoms if any. Acute-formed bezoar, and that too within hours, is hardly described in literature.

And such a mammoth bezoar spanning from esophagus to as far as proximal of 2 ft of jejunum might well be the first of its kind!

In this diverse medical world, we never know if our next patient will add a new chapter to this vast literature. With an ever increasing list of substances and chemicals used for human comfort, we will continue to see newer pathological manifestations; as a by-product of progress, such novel cases may throw light

on the future treatment modalities. An inert substance like polyurethane might will someday replace the conventional sutures in treating a perforation!

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