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CASE STUDY

Oesophageal bezoar as a complication of enteral nutrition in critically ill patients. Two case studies

Fernanda Gil-Almagro, Francisco Javier Carmona-Monge*

Critical Care Unit C, Hospital Universitario Fundación Alcorcón, Budapest 1, 28922 Alcorcón, Madrid, Spain

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Summary Enteral nutrition has a relatively low incidence of major complications. The most common complications are mechanical problems, bronchoaspiration and diarrhoea. A rare complication associated with the use of enteral nutrition is oesophageal bezoar. A bezoar is a body of undigested and partially digested matter in the gastrointestinal tract. The main risks factors are gastric motility dysfunction and the use of opiates or sucralfate. The aim of this paper was to present two cases of oesophageal obstruction resulting from the formation of bezoars due to enteral nutrition.

Both patients experienced prolonged stays in the intensive care unit and were receiving enteral nutrition, and both cases involved an obstruction of the nasogastric tube and the regurgitation of solid chunks of enteral nutrition through the mouth and the nose. Impactions of solidified enteral nutrition in the distal parts of the oesophagus were confirmed with gastroscopies. Enzymatic complexes containing papain, cellulose, pancreatin, pepsin and diastase were used to successfully dissolve the bezoars in both cases.

Implications for Clinical Practice

- Oesophageal bezoar is a rare complication in critically ill care patients related to long periods in dorsal decubitus, intestinal hipomolity and orotracheal intubation.
- It may be difficult to identify its appearance early due to the absence of specific symptomatology.
- Treatment with pancreatic enzymes was effective in the treatment of oesophagic bezoar in both of our cases

* Corresponding author. Tel.: +34 91 621 97 51.
E-mail address: fjcarmona@fhalcorcon.es (F.J. Carmona-Monge).

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Introduction

Enteral nutrition is the most physiological method for providing nutrition to critical patients with functional gastrointestinal tracts (Kreymann et al., 2006). Enteral nutrition is given via the insertion of a gastric or intestinal tube. Enteral nutrition has a relatively low incidence of major complications when compared to parenteral nutrition (Marik and Hooper, 2013). Among the complications that may appear, mechanical problems, bronchoaspiration of gastric content, regurgitation, diarrhoea and metabolic alterations have been observed (Huynh et al., 2013).

A type of complication that appears with a very low incidence when enteral nutrition is administered at the gastric level is oesophageal bezoar. A bezoar is a body of undigested and partially digested matter in the gastrointestinal tract (i.e., the oesophagus, stomach or small intestine). Bezoars are classified according to their components, and the following types can be distinguished (Marcus et al., 2010; Robles et al., 1994): phytobezoars, trichobezoars and pharmacobezoars.

There are different risk factors that may contribute to the appearance of oesophageal bezoars in critical care patients on enteral nutrition. Among the most frequently identified risk factors are the following: the presence of disorders of the anatomy and motility of the gastrointestinal tract (Kim et al., 2010; Shah et al., 1997); the appearance of gastroesophageal reflux, which is more frequent when a nasogastric catheter is used, and the patient has been in the dorsal decubitus position (Douzinas et al., 2006; Marcus et al., 2010); the use of dietetic formulas containing high concentrations of casein (Cremer and Gelfand, 1996; Garcia-Luna et al., 1997; Marcuard and Perkins, 1988; Turner et al., 1991); and the use of common intensive care unit drugs that lead to hypomotility and delay the gastric emptying process (Kesarwani et al., 2010; Nguyen et al., 2008).

Bezoars are formed following the reflux of the acidic contents of the stomach to the oesophagus, which causes the proteins in the enteral nutrition formula precipitate (Hofstetter and Allen, 1992; Turner et al., 1991). The majority of precipitates self-resolve, but occasionally precipitation continues until the oesophagus is obstructed.

The aim of this study was to present two cases of oesophageal obstruction due to the formation of bezoars of enteral nutrition.

Case presentation

Case 1

A 66-year-old man with coma and hypotension had been in the intensive care unit for an extended period. Due to difficulty in the discontinuation of mechanical ventilation, a percutaneous tracheotomy was performed. Six days after his admission to the unit, the administration of enteral nutrition with a high protein formula (Isosource Protein®) was initiated, but had to be suspended after 13 days due to diarrhoea. Parenteral nutrition was initiated (Structokabiven®) and continued for 16 days. After the diarrhoea had resolved, enteral nutrition was gradually reintroduced. The patient then continued with high-protein enteral nutrition for 85 additional days. After 120 days in the unit and after more than three months of the administration of enteral nutrition without complication, an obstruction occurred in the nasogastric tube. A 16FG Levin tube had been in situ for 104 days (as per our protocol, the positions of nasogastric tubes are checked daily, but replacement with a new tube is only performed when there is a problem with the existing tube or when a smaller feeding tube needs to be inserted). The tube was removed, but it was subsequently impossible to place a new catheter. Regurgitation of chunks of the enteral nutrition through the mouth and nostrils was observed. At that time, the patient was receiving no drugs through the nasogastric catheter but was receiving intravenous opiates.

Given the impossibility of inserting the new tube, a gastroscopy was performed. Impaction of solidified enteral nutrition in the distal part of the oesophagus was observed. Attempts were made to remove the obstruction with an endoscope, but it was impossible to completely unblock the oesophageal lumen. Pineapple juice and water flushes were used during the gastroscopy in an attempt to dissolve the impacted mass, but this procedure was unsuccessful (Figs. 1 and 2).

Because it was impossible to unblock the oesophagus mechanically, pharmacological treatment with an enzymatic complex containing papain, cellulose, pancreatin, pepsin and diastase (Digestomen complex®) was initiated. This enzymatic solution was administered through a nasogastric tube that was placed in the proximal part of the bezoar. After the complete dose was administered, an additional endoscopy was performed, and a clean oesophagus with no evidence of the bezoar was observed. A new nasogastric tube was placed without any further problems, and standard enteral nutrition was initiated with no complications.

Case 2

A 67-year-old patient had been taken to the intensive care unit due to acute respiratory failure in the context of septic shock secondary to pyelonephritis. The patient remained in the unit for 170 days. Due to difficulty weaning the patient from mechanical ventilation, a percutaneous tracheotomy was necessary.

The patient was given normal protein enteral nutrition (Isosource Standar®) for 11 days without incidence. Due to an improvement in his clinical condition, the nasogastric tube was removed, and an oral diet was initiated. Worsening of his clinical condition necessitated the resumption of mechanical ventilation. A new nasogastric tube was inserted, and enteral nutrition was reinitiated (Diben Standar®). In addition to the enteral nutrition, the patient was receiving only lactulose (10 g every 24 hours) through the nasogastric tube. All other pharmacological treatments were administered intravenously. Seven days after the initiation of the enteral nutrition, an obstruction in the patient's nasogastric tube occurred (the tube was a 16FG Levin and had been inserted seven days previously). In the attempt to replace the tube, it was difficult to insert the new tube through the proximal zone of the oesophagus. Regurgitation of chunks of enteral nutrition was observed. Until that time, the patient had not suffered nausea, vomiting or any form of pain.