CASE REPORT

REVISED Case Report: Pediatric pharmacobezoar with subacute intestinal obstruction [version 2; peer review: 1 approved, 1 approved with reservations]

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Abstract

Bezoars are an undigested mass causing an intraluminal obstruction in children. Pharmacobezoars are formed from medicines or their vehicle, considered as a less frequent type observed in children. Our objective is to report a relatively rare entity as a potential cause of intestinal obstruction in children. Here we report a case of 13-year-old girl with a history of herbal medicine intake who presented with persistent vomiting and abdominal distension. She was diagnosed with acute intestinal obstruction and managed conservatively without any complications. The patient became stable within two days so was discharged home. We found that ineffective history could lead to a delay in diagnosis and management. Clinicians should have a high index of suspicion for pica and psychiatric disorders, especially in adolescent children.

Keywords

bezoar, pharmacobezoar, intestinal obstruction, children.

Open Peer Review

Approval Status

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1. **Roberto De Giorgio**, University of Ferrara, Ferrara, Italy

2. **Ajay Bhandarwar** , Grant Medical College & Sir JJ Group of Hospitals, Mumbai, India

Any reports and responses or comments on the article can be found at the end of the article.

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REVISED Amendments from Version 1

Minor edits have been done as per reviewers feedback.

Any further responses from the reviewers can be found at the end of the article

Introduction

The word bezoar is derived from the Persian word, or Arabic word *Badzehr*, which both refer to antidote¹. It is defined as the accumulation of undigested ingested material leading to the formation of a mass. Its most common site is the stomach followed by the intestines. The risk of bezoars is higher in children with altered gastrointestinal anatomy, altered motility, and psychiatric disorders. It is further classified by the composition of accumulated material into phytobezoar containing food particles from plant origin, trichobezoar made of hair, lactobezoar formed from milk concretion, and pharmacobezoar formed from medicines or their carrier material². Phytobezoars are the most common among all. Pharmacobezoars are a rare cause of mechanical obstruction of the gastrointestinal tract, and are hence difficult to diagnose. Drugs commonly observed causing bezoar formation are antacids, such as aluminum hydroxide and sucralfate, but they may be caused by other medications, including nifedipine and cholestyramine. Here, we report a case of young girl presenting with intestinal obstruction secondary to excessive intake of herbal medicine. Her diagnosis was delayed for a week despite visiting multiple hospitals due to the paucity of proper history intake.

Case report

A 13-year-old girl presented to the emergency room of our hospital with a complaint of abdominal pain for six days. The

onset of symptoms was followed by a spicy and heavy meal from local restaurant for which she used ayurvedic tablets kept at home with a minimum intake of 30 tablets as narrated by patient herself. There was no family history of pica or other psychiatric illnesses. The pain was moderate to severe in intensity, more in the umbilical region, non-radiating, associated with vomiting, and refusal to feed. The patient was taken to a local hospital where intravenous antiemetic dimenhydrinate 50mg stat was given, along with intravenous fluids. An X-ray of the abdomen was done at that time showing distended bowel loops with significant fecal impaction. The patient was given laxative sodium picosulfate 7.5mg stat and discharged after 4 hours.

Two days later, the patient developed persistent vomiting along with constipation. She was taken to another local hospital where an X-ray of the abdomen was performed showing multiple air-fluid levels. The patient was restricted to oral intake both solids and liquids, an intravenous line was maintained, intravenous fluids and antibiotic ceftriaxone (2 gram once daily) were given, and a nasogastric tube was passed. Surgical opinion was sought at this time and surgical exploration was planned; however, this was refused by the family and the patient was taken to our hospital next day.

At the time of presentation in our hospital, the patient was vitally stable, pale-looking with a nasogastric tube placed in the right nostril. Her abdomen was soft, distended with centrally placed umbilicus and gut sounded sluggish on auscultation. Otherwise, she had no visceromegaly. The patient's drain attached to the nasogastric tube collected 850ml greenish aspirates over 8 hours. Visual assessment of the aspirated fluids showed particles of ingested medicine. Basic laboratory workups, including complete blood count, electrolytes, and creatinine, were performed (Table 1). X-ray of the abdomen done at our

Table 1. Laboratory results with normal ranges.

Laboratory test	Observed values	Reference range
Hemoglobin	11.4 g/dl	12-14g/dl
Total Leukocyte count	13 ×10 ⁹ /L	4-10×10 ⁹ /L
Neutrophil count	62%	54-62%
Lymphocyte count	26%	25-33%
Platelets	362 ×10 ⁹ /L	×10 ⁹ /L
Creatinine	0.5 mg/dl	0.5-1mg/dl
C reactive protein	9.9 mg/dl	0-0.5 mg/dl
SGPT (serum glutamic-pyruvic transaminase)	36 IU/L	12-45 IU/L
Sodium	143 mmol/L	136-145 mmol/L
Potassium	3.3 mmol/L	3.5-5.1 mmol/L
Chloride	105 mmol/L	98-107 mmol/L
Bicarbonate	19.4 mmol/L	20-31 mmol/L

hospital showed a deeply placed nasogastric tube (difficult to locate due to low quality images) with distended bowel loops (Figure 1 and Figure 2). CT scan could not be performed due to non-affording parents. The nasogastric tube was removed and the patient was kept on intravenous ceftriaxone (1 gram twice daily) and metronidazole (250mg every 8 hours for 3 days). Surgical consultation was reviewed and after 6 hours she was allowed liquids and foods orally, initially for liquids then after 8 hours solid food was given.

The patient passed stool and had no issues of vomiting, so she was discharged on the second day of admission after dietary counseling. X-ray abdomen showed normal gaseous shadows (Figure 3). Scheduled follow up after 10 days, showed that the patient was in good condition.

Discussion

Mechanical obstruction caused by pharmacobezoars accounts for 4% of all patients with intestinal obstruction, often subacute obstruction³. Mechanisms involved in formation of pharmacobezoars include dysmotility secondary to an anatomical defect or anticholinergic effects of the drug, a massive quantity of drug intake, or its hydrophobic nature⁴. Ingestion of medicine in huge quantities may be secondary to mental retardation, psychiatric disorders, or suicidal intentions. There is limited published data of pediatric pharmacobezoar internationally in this regard with no documented evidence in the local population in Pakistan.

Imaging modality used in diagnosis of pharmacobezoars includes plain radiographs and ultrasonography, and more

Figure 1. X-ray of the abdomen showing diffuse fecal loading.

Figure 2. X-ray of the abdomen showing multiple air fluid levels.

Figure 3. X-ray of the abdomen showing normal gaseous shadows after treatment.

advanced techniques, such as CT scan. Endoscopy may be considered as a diagnostic tool as well as a therapeutic option for an impacted bezoar. Visual assessment and biopsy of fragmented bezoar tissue are also helpful in diagnosis.

Treatment options vary from a non-surgical approach, including conservative management, to laparoscopic approach or open laparotomy in rare circumstances. Non-surgical options include dissolution of bezoar, fragmentation, gastric lavage, or endoscopic removal, which is considered as the first line in management⁵. Irrigation of normal saline along with the withdrawal of the causative medicine has been effective in some cases⁶. One study has showed that the dissolution of pharmacobezoars was performed with cellulose and diet coke along with multiple medications¹.

Our patient had a history of intake of herbal medicine composed of tamarind, guava, mint, and other spices. There was an unintentional massive intake of tablets within a short time, leading to its concretion in the small intestine. She was diagnosed with X-ray of the abdomen and managed with normal saline irrigation and abstinence of the culprit medicine as we had a lack of availability of endoscopy for pediatrics in our city.

If left untreated, bezoar may lead to perforation, peritonitis, weight loss, ulcer, anorexia, and constipation⁷. Endoscopic removal of bezoar may lead to aspiration, particularly in the case of fragmentation. Timely management is key to avoid these complications. Risk factors attributing to the development of bezoars, such as gastrointestinal motility disorders, drug interactions and psychiatric illnesses, should be addressed appropriately to avoid recurrent bezoars.

Conclusion

Bezoars account for a sporadic number of patients with mechanical intestinal obstruction. History of pica should be evaluated in patients with bezoars. Proper dietary counseling, adequate chewing, and psychotherapy may prevent this condition.

Consent

Written informed consent to publish the case report along with images was obtained from the father of the patient.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

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Roberto De Giorgio

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Approved! No further comments.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Gastrointestinal motility and functional bowel disease.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 30 November 2020

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Ajay Bhandarwar

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1. History and progression are detailed, however, the need for ayurvedic tablet ingestion has not been mentioned in the first place. Indigestion associated 30 tablet intake seems

unlikely.

2. Does the patient have any other previous Psychiatric illness history or Family history of the same? This is needed for reading practitioners to understand the association of Bezoars with psychiatric illness even at a young age.
3. The productive finding is that conservative Management can be approached in such cases, however, it should not be generalised treatment. Hence pre-op scoring systems can be employed to give a trial of conservative management in the future.
4. Management seems to be a basic conservative line of treatment, with no new findings. But reaffirmation of known treatment modality. Image of Nasogastric tube aspirate of 800+cc would have been more impactful.

Overall, for inexperienced practitioners, it is a good read to understand the importance of a conservative trial and immediate stabilisation management steps. However, the above-mentioned points might make it more worthwhile a read.

Is the background of the case's history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Partly

Is the case presented with sufficient detail to be useful for other practitioners?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Minimal Access surgery in GI, Endocrine and HPB surgeries.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 09 October 2020

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Very interesting, well detailed case.

1. I suggest the Authors to improve the quality of the images presented in this case report.
2. Please note that Fig. 1 does not match with the text (no evidence of the N-G tube...where is it?).
3. Explain why a CT scan of the abdomen was not performed.

Is the background of the case's history and progression described in sufficient detail?

Yes

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

Yes

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Yes

Is the case presented with sufficient detail to be useful for other practitioners?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Gastrointestinal motility and functional bowel disease.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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