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RESEARCH ARTICLE

CASE REPORT: ACUTE SMALL BOWEL OBSTRUCTION IN A TODDLER DUE TO WATER-ABSORBING BEADS:

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Abstract

This case report describes a 21-month-old boy who presented with recurrent non-bilious vomiting and poor oral intake, later diagnosed with acute small bowel obstruction caused by the ingestion of water-absorbing beads. The obstruction required exploratory laparotomy for removal of the beads. The case highlights the risks associated with these objects in pediatric populations and emphasizes the importance of thorough history-taking in such scenarios.

Introduction:-

The majority of foreign body ingestions occur in children between the ages of six months and three years (1,2). Commonly ingested objects include coins, button batteries, toys, toy parts, magnets, safety pins, screws, marbles, bones, and food boluses (3). Water beads are spherical, gelatinous toys measuring 2 to 3 mm that expand on contact with water, particularly in an alkaline pH. Young children may be attracted to swallow the toys by their candy-like appearance and bright color. The beads are radiolucent and difficult to detect on plain radiographs. In addition, young children typically cannot communicate well about the swallowing events. Thus, ingestion of water beads is prone to delayed diagnosis and consequent intestinal obstruction (4,5).

This report discusses a rare case of acute small bowel obstruction caused by these beads, requiring surgical intervention.

Case Presentation

Patient History:

A 21-month-old boy presented to the emergency department on May 27, 2024, with a two-day history of non-bilious vomiting (2–4 episodes daily) and poor oral intake. He had no fever, diarrhea, or history of trauma. Initial management at home with antiemetics was ineffective, prompting hospital admission.

Clinical Examination:

On examination, the child was stable, with unremarkable systemic findings. The abdomen was soft with no organomegaly.

Investigations

• Initial Laboratory Results:

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• CBC: Hb 12.1 g/dL, WBC 8.1 x 10^3/µL, Platelets 249 x 10^3/µL
• CRP: 1.8 mg/L (normal < 5 mg/L)
• Electrolytes: Sodium 130 mmol/L (low), Potassium 4 mmol/L, Bicarbonate 17.4 mmol/L (low), indicating mild dehydration and metabolic acidosis.
• Imaging Findings:
• Initial X-ray Abdomen: Suggestive of small bowel obstruction with moderate free fluid, raising suspicions of intussusception or volvulus.

Figure 1:- SupineX Ray abdomen showing dilated bowel loops.

Figure 2:-Erect X Ray abdomen showing multiple air fluid levels.

•Abdominal Ultrasound at Referral Center: Multiple fluid-filled, anechoic rounded lesions (~3 cm) within the small bowel loops causing obstruction. Moderate ascites was noted.

Figure 3:- USG demonstrating multiple fluid filled rounded lesions.

Revised History

Upon review, the mother disclosed a history of water bead ingestion two days prior, which she had initially did not reveal as she thought it is unrelated to the child's symptoms.

Management

The child was referred to a tertiary care center for further evaluation. Exploratory laparotomy revealed five hydrophilic beads causing multiple levels of ileal obstruction. An enterotomy was performed, and all beads were successfully removed. Post-operatively, the child was managed with IV antibiotics and was gradually started on oral feeds from the fourth day and discharged in good general condition.

Figure 4:- Intraoperative image showing hydrophilic beads removed from ileum.

Discussion:-

This case underscores the dangers posed by water-absorbing beads in pediatric populations. Upon ingestion, these beads can expand significantly, leading to intestinal obstruction, which may mimic other conditions such as intussusception or volvulus. A thorough history, including potential exposure to foreign bodies, is critical in diagnosing such cases. Imaging modalities such as ultrasound and X-rays can help identify the obstruction and its cause. Studies show that the diameter of water beads can increase from 2 to 9.5 mm and from 7.5 to 40 mm if exposed to water for 12 hours, so swallowed water beads will clog the small intestine which only has a diameter of 25-30 mm (6,7).

While the use of water beads is widespread, their potential risks are often underestimated. Pediatricians and caregivers should be educated on these risks to prevent similar incidents.

Conclusion:-

Water-absorbing beads are a growing cause of intestinal obstruction in young children. Prompt recognition and surgical intervention are key to managing such cases effectively. Public health measures to limit access to these beads for children may help reduce the incidence of such events.

Declarations
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Nil.

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