

CASE REPORT

Gastrointestinal bleeding secondary to an incidental foreign body – a case report and literature review

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ABSTRACT

We report the case of a 3-year-old girl who was admitted to the hospital because she had been passing tarry stools for about a month. Passing black, tarry stools is a distressing symptom and usually the result of gastrointestinal (GI) bleeding. Injury due to an ingested foreign body may be one of the causes of GI bleeding. The increasing popularity of magnetic toys in recent decades has raised the incidence of magnet ingestion in the pediatric population. Injuries caused by these objects carry a significant and potentially preventable risk of morbidity and even mortality in children. The clinical picture is variable and may include non-specific symptoms such as GI bleeding. It is important for pediatricians to consider the possibility of a foreign body in the GI tract in the diagnosis of GI bleeding and spread awareness about the danger of objects containing magnets.

KEY WORDS:

children, gastrointestinal bleeding, magnetic foreign body.

INTRODUCTION

Passing black, tarry stools is a distressing symptom and usually the result of gastrointestinal (GI) bleeding. Causes of GI bleeding vary with age and include gastritis, enterocolitis, vascular malformations, Meckel's diverticulum, polyps, congenital defects such as GI duplications, and mechanical injuries associated with the presence of a foreign body [1, 2]. The increasing popularity of magnetic toys in recent decades has resulted in an increased incidence of magnet ingestion in the pediatric population [1]. In theory, the ingestion of a single magnetic foreign body poses no greater risk than the ingestion of another blunt object – in these cases, spontaneous passage usually occurs. However, ingestion of multiple magnets, or a magnet with a ferromagnetic object, can turn a clinically benign situation into a life-threatening one.

CASE REPORT

A 3-year-old girl was admitted to the Pediatric Gastroenterology Department because of black, tarry stools of variable consistency (liquid, normal or constipated), passed once a day for about 4 weeks, without the presence of fresh blood. The patient was in a good general condition with no complaints of abdominal pain. There was no significant past medical history to date. On physical examination there was no abdominal tenderness or distention. Performed tests were positive for fecal occult blood. Other laboratory findings including complete blood count and C-reactive protein were within normal limits. Upper GI endoscopy revealed foreign bodies attached to the pyloric region reaching to the duodenum – colored, magnetic beads, 4 mm in diameter, surrounding the mucosa with erosions and 4 mm ulceration in the pyloric canal (Figure 1).

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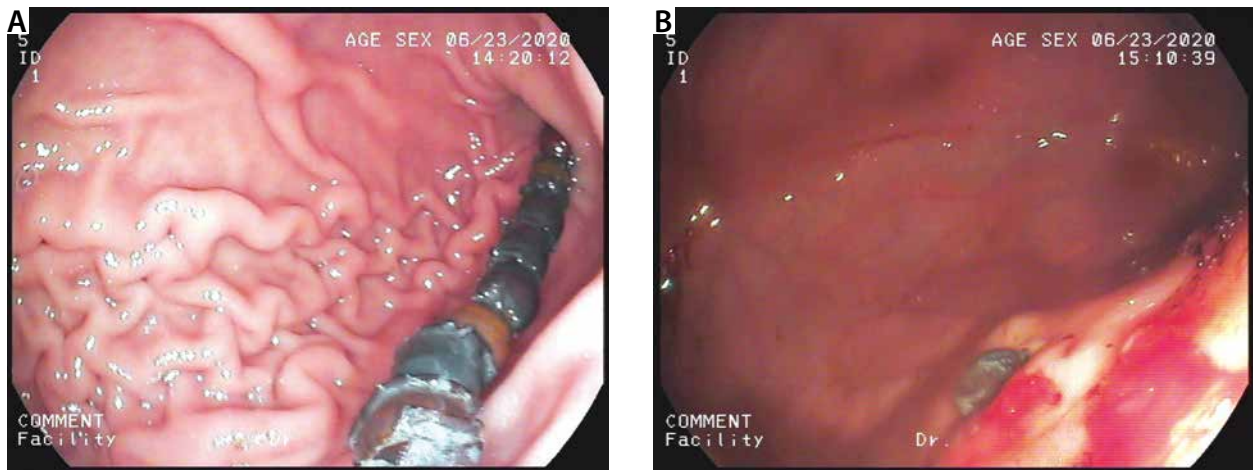


FIGURE 1. Foreign bodies found in the stomach and mucosal lesions visible after foreign body removal

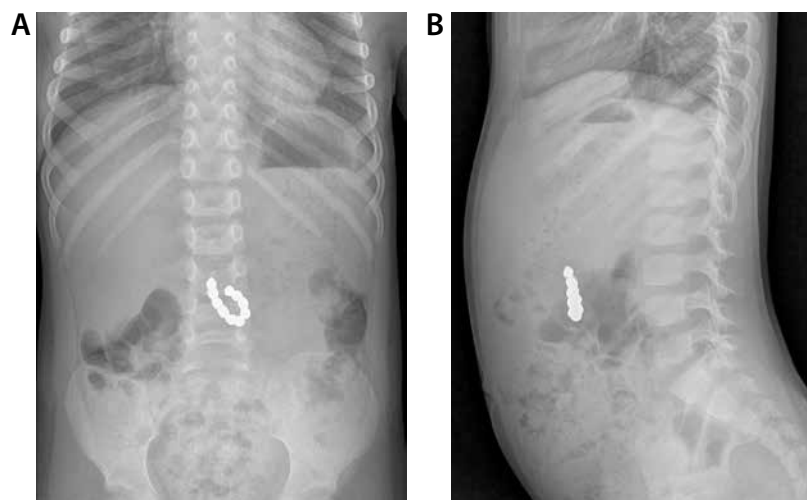


FIGURE 2. Abdominal X-ray with visible foreign bodies

The foreign bodies were removed with forceps, then the stomach and duodenum were inspected up to the descending part, and any foreign bodies were presented. Abdominal plain X-ray, performed after endoscopy, showed 10 round radio-opaque objects arranged in a “string of beads”, present in the upper abdomen near the midline below the stomach. There were no signs of intestinal obstruction or perforation (Figure 2).

The patient was referred to the Department of the Pediatric Surgery for further treatment. The second abdominal X-ray revealed no signs of progression of the foreign bodies. The patient was scheduled for surgery. The procedure began with a laparoscopic approach. The small intestine was clearly visualized and carefully inspected all the way from the Treitz ligament. There were no signs of perforation, inflammation, adhesions, or intestinal fistula. The accessible parts of the colon were also inspected, with no pathological findings. As the next step, X-ray guided gastroduodenoscopy was performed. The endoscope was passed beyond the duodenal papilla and the presence of foreign bodies was confirmed distally beyond the range of the endoscope. An upper abdominal

incision was made. Small beads were palpably detected at the level of the Treitz ligament. An enterotomy was performed and all 10 magnetic beads were carefully detached from the mucosa and removed. The postoperative course was uneventful. The follow-up abdominal X-ray was clear, with no evidence of foreign bodies. Enteral feeding was started on the third postoperative day. Four days after the surgery the patient was discharged home in good general condition. At the follow-up visit 30 days after surgery, the child was healthy, tolerated feeding well, without GI bleeding or other concerning abdominal symptoms.

DISCUSSION

Currently used rare-earth or neodymium magnets have 5 to 10 times the attractive force of conventional (ferrite) magnets. As a result, they are widely used in many toys, jewelry, and kitchen gadgets [3]. The majority of cases of ingestion occur in children between the ages of 6 months and 3 years [4]. The small size of the magnets and their colorful appearance make them attractive to young children exploring the world organoleptically.

However, the current fashion among teenagers for “mimic body piercing” (magnets are used to attach jewelry to the tongue, lip or cheek) can also result in accidental ingestion in this age group [3]. In addition, patients with potentially significant psychiatric or neurological disorders (e.g.: autism, pica, attention deficit, hyperactivity disorders, developmental delay) are also at risk [5].

The most dangerous situations occur when multiple magnets or a magnet plus additional ferromagnetic object are swallowed at the same time. Significant forces of attraction between foreign bodies, especially those located in various parts of the GI tract, cause local pressure on the tissues between them. This can lead to ischemia and result in ulceration, fistula formation, perforation, abdominal abscess or obstruction [6].

Reporting to the doctor with the child usually occurs after a parent witnesses ingestion of a foreign body or the patient reports it him- or herself. It is extremely important to be vigilant because the history can be misleading in many cases. It concerns the type of objects ingested, their quantity and information about the foreign body ingestion. In the case described, it was not possible to obtain an accurate medical history because the caregiver was unaware that the child had swallowed the magnets. In such cases, diagnosis and treatment may be delayed for days or months, resulting in serious complications [5].

The clinical picture often depends on the time elapsed since ingestion and the location and is due to the degree of mucosal damage and mechanical obstruction. The clinical picture may be varied and initially asymptomatic or nonspecific. Possible symptoms to watch out for include throat and chest pain, choking and drooling, dysphagia, nausea and vomiting, abdominal pain, distention, the presence of abdominal rebound tenderness or GI bleeding (e.g. black, tarry stools) [3, 7]. It should be underlined that a patient may be admitted to the hospital after several days or even weeks due to developing complications [8].

The initial diagnosis should include a thorough physical examination for signs of GI obstruction and perforation. A plain anterior-posterior and lateral X-ray of the chest and abdomen is recommended as the first-line study [9]. It allows one to confirm the presence of a foreign body, clarify its location (reported symptoms may not accurately indicate the location of the foreign body), type and number of swallowed objects. In fact, determining the location of magnetic and other foreign bodies (such as pearls, coins, or jewelry) based on an X-ray image can be difficult even for experienced clinicians. Moreover, on a plain X-ray image, multiple magnets connected to each other may be visible as a single foreign body. Misdiagnosis can lead to delayed treatment and reoperations and cause serious complications [10].

In 2015, the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition published a clinical report providing guidelines for managing

a child after foreign body ingestion. According to this consensus, the type and timing of intervention depend on many factors, such as the size and type of foreign body, its location, symptoms, and patient's age. If a single magnet is located in the esophagus or stomach and the patient is asymptomatic, conservative management can be implemented with follow-up X-rays over the next 2 days (to confirm passage) and appropriate caregiver education. Caregivers should be advised to remove all magnetic objects in the child's environment, avoid clothing with metal buttons or belts with buckles. In particular cases (symptomatic patient, risk of ingesting another foreign body, inability to closely supervise), removal using endoscopic methods should be considered. If a single foreign body is located below the pylorus and delayed passage is demonstrated, polyethylene glycol or other laxative preparation may be used [9]. If there is a possibility that more than one magnetic foreign body has been ingested or such a diagnosis is confirmed, removal of foreign bodies is indicated even in asymptomatic patients. In this case, close partnership between pediatric gastroenterologists and pediatric surgeons is essential, and the choice of treatment depends on the location and the time interval between ingestion and presentation. If the foreign body remains in the esophagus and stomach, endoscopic removal should be attempted before 12 hours after ingestion. Surgical intervention via laparoscopy or laparotomy is required if the foreign body is located beneath the pylorus [9, 11].

A slightly different approach can be found in the Executive summary of the Guideline on pediatric GI endoscopy commissioned in 2017 by the European Society for Paediatric Gastroenterology Hepatology and Nutrition and the European Society of Gastrointestinal Endoscopy. In the case of ingestion of magnets, even for a single magnet, it is advised to urgently (up to 24 hours) remove all objects within endoscopic reach. In other cases, close observation and surgical consultation for non-progression through the GI tract is recommended [12].

CONCLUSIONS

With the increasing incidence of magnet ingestion in children, it is important for pediatricians to spread awareness about the danger of objects containing neodymium magnets. Injuries caused by these objects carry a significant and potentially preventable risk of morbidity and even mortality in children. The clinical picture is variable and may include non-specific symptoms such as GI bleeding, as in the case described. The history taken from the child or parents is often misleading, but necessary for early diagnosis and appropriate management.

DISCLOSURE

The authors declare no conflict of interest.

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