JEJUNOILEAL PERFORATION AND VOLVULUS CAUSED BY MULTIPLE MAGNET INGESTION

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SUMMARY – Foreign body ingestion is a common problem in children, but magnet ingestion is relatively rare. However, when it occurs, it tends to have a high rate of complications. This is a case report of a 3-year-old child who swallowed multiple magnetic toys, subsequently developing jejunoileal perforation and volvulus. This case report indicates that it is best to surgically remove multiple ingested magnets without delay to avoid intestinal perforation, fistula, and other complications such as volvulus.

Key words: *Foreign body, swallowing; Foreign body, migration; Intestinal perforation; Intestinal volvulus; Child*

Introduction

Foreign body (FB) ingestion is common in children, especially those between 6 months and 3 years of age. Of these, approximately 80% pass without intervention and 10%-20% are removed endoscopically; only 1% of patients present with complications such as obstruction, volvulus, perforation or fistula[1]. Magnetic FB ingestion is seen more rarely. Magnetic FBs may cause intestinal perforation, fistulas, and volvulus, which have been reported rarely[2]. This case report describes small intestinal perforation and volvulus that developed in a pediatric patient.

Case Report

One week prior to presentation, a 3-year-old male had been playing with small magnetic beads and then developed restlessness, abdominal distension, and bilious vomiting. On the standing direct abdominal x-ray, a large number of aggregated magnetic FBs were seen. Abdominal ultrasonography revealed dense abdominal fluid. Physical examination revealed widespread tenderness and rigidity of the abdomen, so he underwent emergency surgery. The surgeon observed multiple foreign bodies that had adhered together distributed at different points throughout the intestine. Consequently, jejunoileal perforation and volvulus were present along with necrosis at four sites. The primary perforation was repaired and 32 magnetic beads were removed. One week after surgery, the patient recovered and was discharged.

Discussion

Foreign body ingestion is a common problem in children, but magnet ingestion is relatively rare. When it does occur, it tends to have a high rate of complications. A single ingested magnet can often be removed without significant damage, but multiple magnetic FBs can often cause serious intestinal damage. Very few cases of multiple magnetic FBs have been reported. Gastrointestinal FBs are observed most commonly in children aged 6 months to 3 years. For any patient with a sudden onset of bilious vomit-

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Fig. 1. Ileocecal fistula caused by 2 small round magnets attracting each other through the intestinal walls

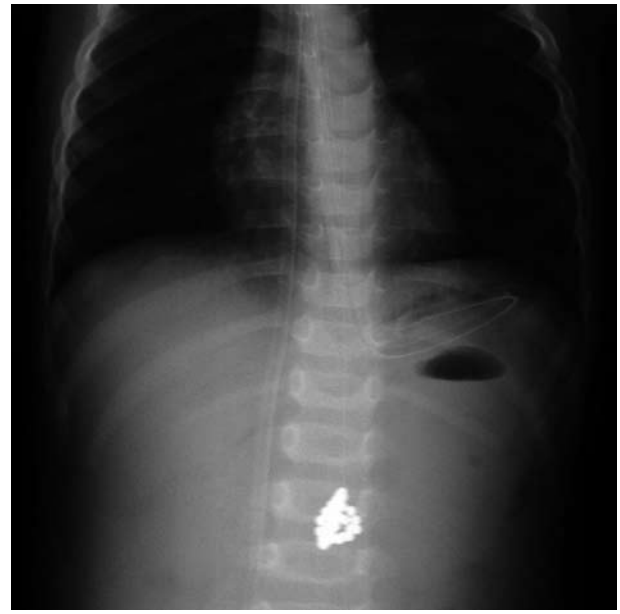

Fig. 2. Abdominal x-ray shows multiple metallic foreign bodies in the median abdomen

ing, especially those in this age group, standing direct abdominal x-rays should be performed to check for FBs[1,2].

Magnetic FB complications are typically observed between days 1 and 7 after ingestion[3]. In the case reported by Nui *et al*., overt symptoms developed by day 2 following ingestion[2], and by day 4 in the cases described by Cauchi *et al*.[4] and Pryor *et al*.[5]. In our case, symptoms began on day 7 following ingestion.

The literature contains several case reports of gastrointestinal complications due to ingestion of magnetic FBs. Cauchi *et al*.[4] report on ileal perforation, while Lee *et al*.[6], Honzumi *et al*.[7], and Kubota *et al*.[8] observed jejunojejunal fistula and obstruction. Tay *et al*.[9] also report on perforation and obstruction, Nagaraj *et al*.[10] on ileal perforation, and Pryor *et al*.[5] on ileal perforation at three sites and fistulas at two sites. In our case, jejunoileal perforation and volvulus developed at four separate sites.

In any patient who has ingested multiple magnetic FBs, standing direct abdominal x-rays should be obtained. If the FBs have entered the small intestine, they must be immediately surgically removed to avoid serious complications[1,6]. Nui *et al*.[2] agree that laparotomy should be performed before complications arise in patients that have ingested multiple magnetic FBs[2,11]. Cases of magnetic FBs with various intestinal complications (perforation, fistulas, volvulus, etc.) have been reported[1-4]. Our case supports those in the literature. On day 7 after ingestion of multiple magnetic beads,

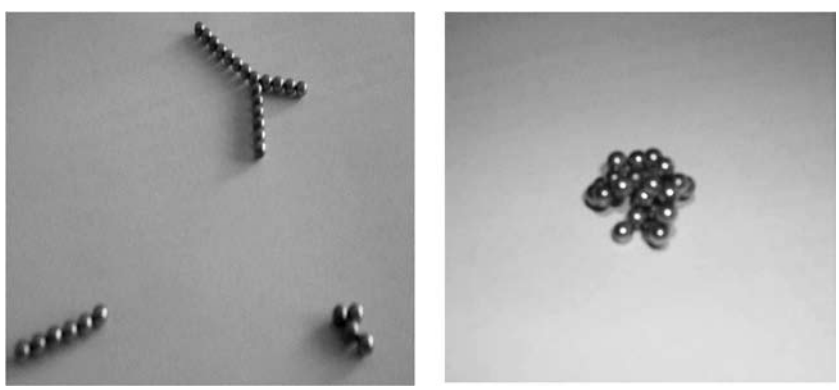

Fig. 3. Multiple small magnetic toys.

necrosis and perforation developed due to adherence of the magnets to each other in the small intestine. In addition, volvulus and obstruction developed and the patient's general condition deteriorated rapidly. Once complications have developed, the morbidity and mortality increases. Thus, any magnetic FBs should be immediately surgically removed.

Conclusion

In children, most ingested FBs tend to pass through the gastrointestinal tract unaided. This is also possible following ingestion of a single magnetic FB, but if multiple magnetic FBs have been ingested and are present in the upper gastrointestinal tract, they should be removed endoscopically. However, if they have moved into the lower gastrointestinal tract, they must be surgically removed immediately. Otherwise, complications such as perforation, fistulas, volvulus, and obstruction can result, increasing the morbidity and mortality in these cases.

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Sažetak

JEJUNO-ILEALNA PERFORACIJA I VOLVULUS UZROKOVANI VIŠEKRATNIM GUTANJEM MAGNETNIH STRANIH TIJELA

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Gutanje stranog tijela čest je problem u djece, no gutanje magneta je relativno rijetko. Međutim, kad se to dogodi obično je praćeno visokom stopom komplikacija. U ovom prikazu slučaja opisuje se trogodišnje dijete koje je progutalo mnoštvo magnetnih igračaka, što je izazvalo jejuno-ilealnu perforaciju i volvulus. Ovaj prikaz slučaja pokazuje da je najbolje bez odlaganja kirurški odstraniti takve progutane magnete kako bi se izbjegla perforacija crijeva, fistule i druge komplikacije kao što je volvulus.

Ključne riječi: *Strano tijelo, gutanje; Strano tijelo, migracija; Perforacija crijeva; Crijevni volvulus; Dijete*