

CASE REPORT

Airway

Nearly missed laryngeal foreign body

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Abstract

Foreign body ingestion and aspiration can present as a life-threatening emergency in children. These foreign bodies are diagnosed based on history, physical exam, and focused radiography to reduce the risk of excessive radiation. We describe a case of a 3-year-old child who ingested magnetic beads and presented to the emergency department with no symptoms. On a single view x-ray of chest and abdomen, the magnetic beads were identified in the abdomen but a closer look at these single view x-rays raised a suspicion of additional foreign bodies in the larynx. A dedicated x-ray of the neck identified 2 more magnetic beads locked with each other on either side of the epiglottis. These laryngeal magnetic beads were nearly missed on initial x-rays, especially because the child had no symptoms of upper airway obstruction. This case report provides further evidence that in the evaluation of radiopaque foreign bodies in children we should strongly consider “nose to rectum” x-rays.

KEYWORDS

airway, children, laryngeal foreign body, Magnets

1 | INTRODUCTION

Airways foreign body aspiration is one of the common causes of accidental death in children less than 4 years of age.¹ Airway foreign bodies can become impacted in the larynx, trachea, or bronchial tree and hence the symptoms and signs on presentation vary according to the location.² Laryngeal foreign bodies are less common compared to bronchial foreign bodies.³ Organic material comprises the majority of the cases of aspirated foreign bodies making their diagnosis more difficult as they are radiolucent on traditional x-rays.² We present an interesting case of a child who had neodymium magnets as laryngeal foreign body with no symptoms of upper airway involvement on presentation.

2 | CASE REPORT

A 3-year-old girl was brought in for evaluation after she swallowed metallic magnet beads almost 3 hours before presentation. According

to her parents she did not complain of any abdominal pain, vomiting, difficulty in breathing, choking episode, cyanosis, or stridor. No significant family, social, or past medical history existed. On examination the patient was active and alert and showed no signs of respiratory distress. Abdominal examination was normal as well. Cardiorespiratory, head, neck, ears, and throat exams were also normal.

After examination we obtained an upright anteroposterior x-ray of the chest and abdomen. Thirty-seven magnetic beads were identified in the stomach (the beads were attached to each other by magnetic force to form a necklace) (Figure 1). The white density (identified by arrow) raised suspicion of additional foreign bodies (Figure 1). The foreign body in the neck was missed in the emergency department owing to lack of anticipation (absent signs of upper airway obstruction and clear history of ingestion). The suspicion of an additional foreign body was raised by the radiologist. So, an x-ray of the neck was obtained. On the x-ray of the neck (lateral view) 2 additional magnetic beads were identified in the upper airway attached to each other (Figure 2).

At this point an ear, nose, and throat physician was consulted and the patient was taken to an operating room where video laryngoscopy was

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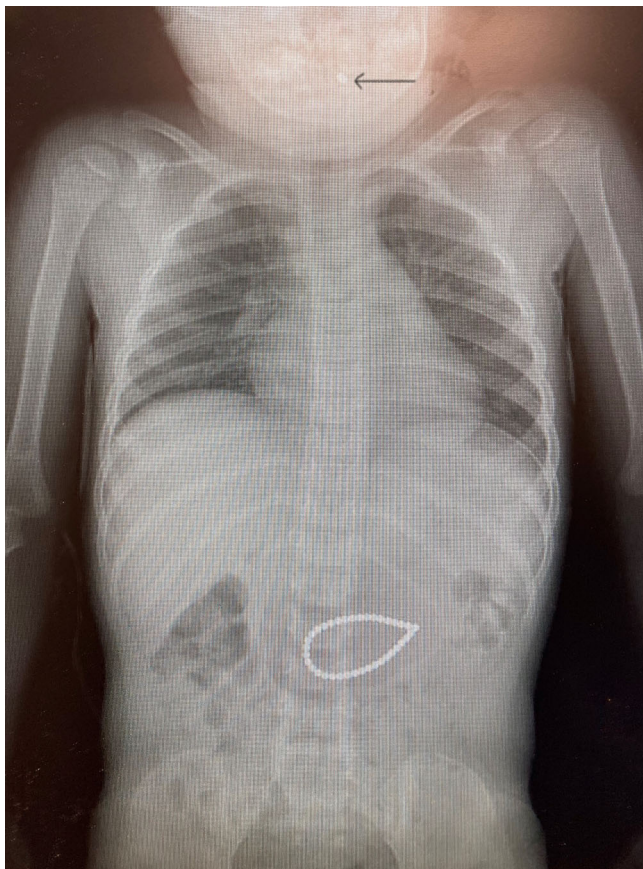


FIGURE 1 X-ray of chest and abdomen



FIGURE 2 X-ray of lateral neck

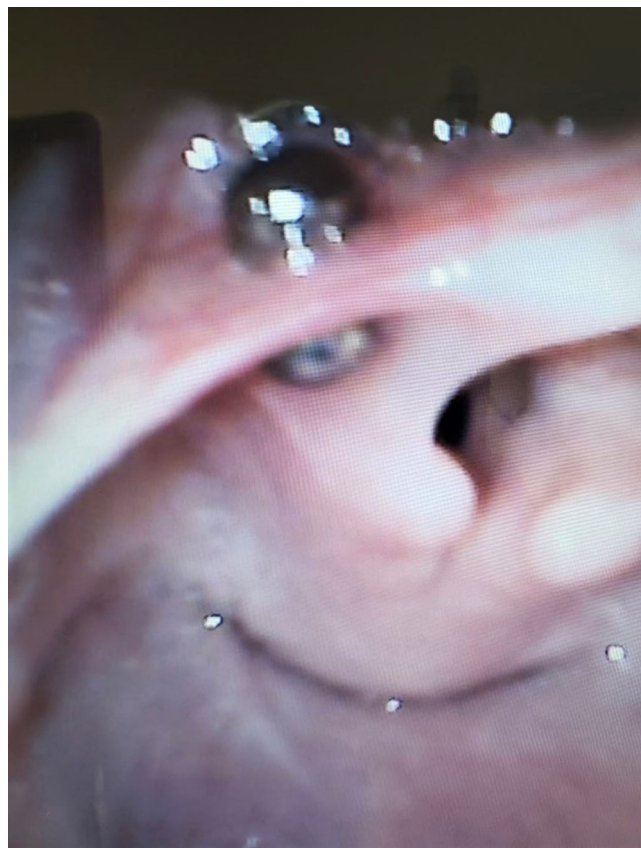


FIGURE 3 Laryngoscope image of epiglottis

used to visualize the larynx; 2 magnetic beads were identified on either side of the epiglottis locked to each other (1 bead on the laryngeal surface and the second bead on the vallecular surface) (Figure 3). Using a large cup forceps, the bead along the laryngeal surface was grasped and slowly removed. As it was being extracted, the opposing bead on the side of the vallecula followed via magnetic attraction and the foreign bodies were removed together as 1 piece. The patient tolerated the procedure without any complications. No laryngeal edema was identified.

After the procedure, the patient was admitted to pediatric inpatient for serial x-rays of abdomen until the magnet beads reached the large colon and the patient was discharged home. Patient did not develop signs of intestinal obstruction during stay in the hospital.

3 | DISCUSSION

Upper airway foreign bodies tend to present with rapid and severe symptoms ranging from incomplete obstruction like stridor to complete obstruction.⁴ On the other hand, bronchial foreign bodies can be asymptomatic,³ although there are case reports of hollow tracheal foreign bodies presenting with mild symptoms.^{3,5}

Rare earth magnets or neodymium are components of toys. Also these are sold as "stress relievers" that are made of multiple magnetic beads. The incidence of magnetic foreign body ingestion is 5 per

100,000 visits to the ED.⁶ Although most magnetic foreign bodies have been reported as ingestion, there have been case reports of magnets involving the airway. According to our knowledge there is one case report and one case series of magnets involving the upper airway.^{7,8} In all of these cases patients presented with symptoms of dysphagia and no oral intake and/or odynophagia. On the other hand, in our case the patient did not show any symptoms of decreased oral intake, stridor, or difficulty swallowing. The magnets in the upper airway were noticed incidentally on x-rays.

Rare earth magnets (neodymium) are 5–10 times more powerful than traditional magnets and smaller in size, found in various products.⁹ Because of their powerful attraction, they tend to attract each other across different loops of bowel leading to intestinal perforation, fistulas, and ulceration in as little as 8 hours.¹⁰

In 2012 North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN) revised algorithms for magnetic ingestion and defined the role of gastroenterologists and endoscopy in cases of rare earth magnet ingestions.¹⁰ According to (NASPGHAN), multiple magnets within esophagus and stomach need to be removed endoscopically; whereas, multiple magnets beyond the stomach can be managed conservatively if patient is asymptomatic but will require surgery if the patient becomes symptomatic.¹¹ Our patient also ingested multiple magnetic beads owing to which the patient was admitted for observation. The patient did not develop any symptoms.

The choice of radiographs in cases of suspected foreign body ingestion can be guided by history and physical examination. In case of multiple magnets an initial 2-view radiograph is suggested as the single view can miss multiple magnets especially if they are clumped together.¹⁰ X-rays from “nose to rectum” will likely be the best initial approach in many cases, because the history is often somewhat unclear and examination is frequently non-specific.¹²

Laryngeal foreign bodies can be asymptomatic as well. In our case the laryngeal magnetic beads were discovered incidentally as we initially obtained only a single view of the x-ray chest and abdomen. It is important to note that missing a foreign body in the airway can have serious complications like obstructive emphysema, atelectasis, and pneumonia with a rate of complication higher than 60%, if the diagnosis is delayed by more than 4 days.¹³ The take-home message is that in evaluation of radiopaque foreign bodies history, physical exams, and x-rays from nose to rectum should be considered.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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