Unwitnessed Oesophageal Foreign Body Ingestion: A Case Report

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Introduction

Children frequently ingest foreign bodies by accident. The diagnosis should be straightforward when the ingestion is witnessed and reported by the care giver or the child.

Making a diagnosis however becomes challenging when the episode is not witnessed because many of the children are asymptomatic at presentation and when present, the symptoms can be subtle and non-specific.

Case Study

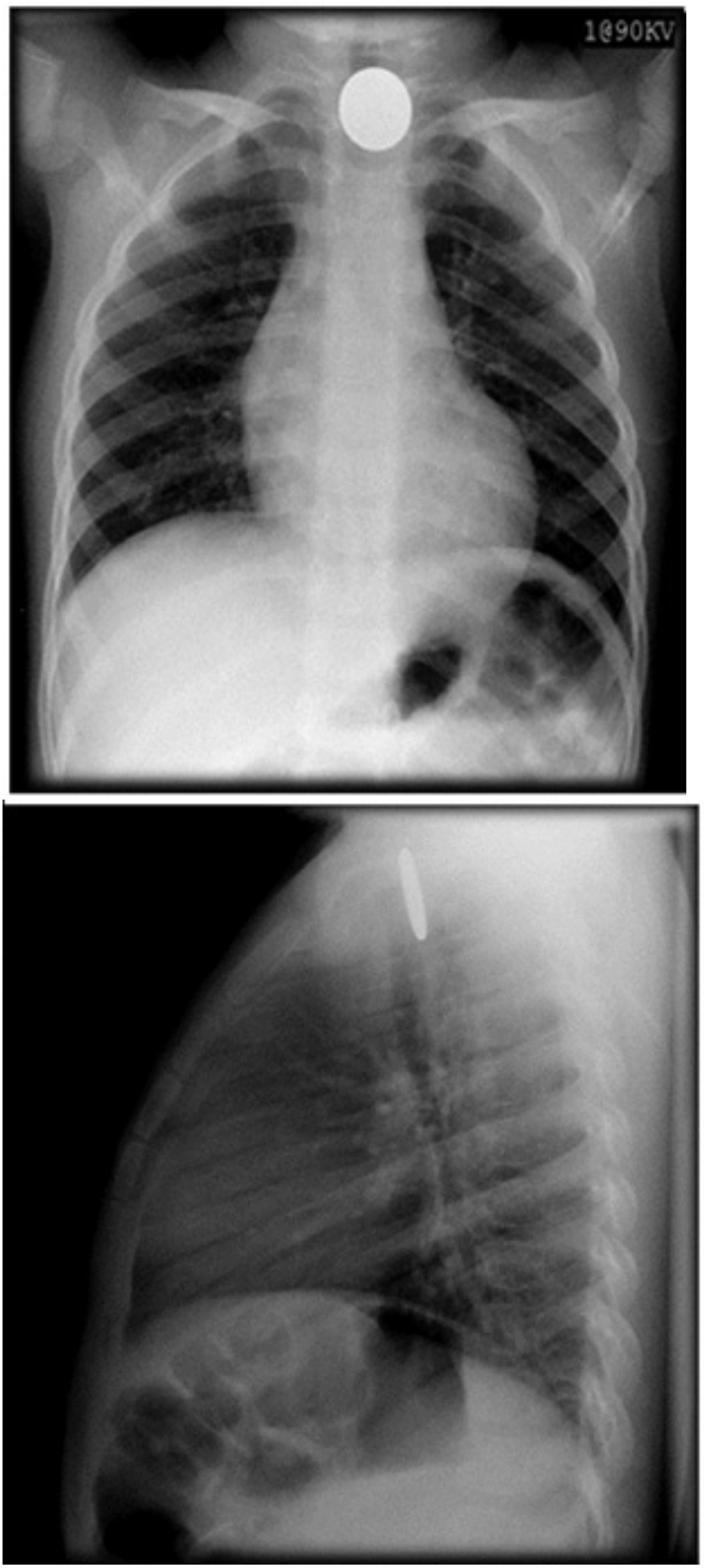
A father brought his three-year-old son into the clinic concerned that his son had lost his voice and had stopped talking 3-4 hours prior to presentation. The father also noted that he had started drooling saliva which was unusual for him. He had consumed milk without difficulty a few hours prior to presentation.

The child had a history of speech delay for which he was under the speech therapy team. He had been discharged six months prior to presentation, as he had made progress with his speech.

On examination, the child was alert and responsive. He was subdued but still playing with his soft toys. His temperature and vital signs were within normal range. Examination of the mouth, chest and abdomen were all unremarkable.

The family physician was unable to explain why he had stopped talking or drooling saliva but felt reassured that the child was not acutely unwell. He advised that he thought it was a viral illness and advised the child's father to manage him conservatively with analgesia if needed and to return if the symptoms did not improve in a few days, or earlier if he deteriorated.

The drooling of saliva however continued at home and he became more tired, his parents contacted the ambulance service and he was taken to the emergency department of the local hospital. The clinicians at the emergency department suspected a swallowed foreign body, a metal detector confirmed the presence of a metallic foreign body. X-rays of the chest, neck and upper body revealed a radio opaque object in the oesophagus at the C5/C6 region and a two pence coin was removed by ears, nose and throat surgeons under general anaesthesia endoscopically.



Frontal and lateral x-rays demonstrating an ingested coin lying in the oesophagus of a 3 year old boy.

Courtesy of A.Prof Frank Gaillard, Radiopaedia.org, rID: 8286

Discussion

Accidental foreign body ingestions are common in children, of the over 100,000 cases reported each year in the United States, 80% occur in children(1), mostly between the ages of six months and three years(2), and in older children with developmental delay and behavioural problems (3). Children tend to explore objects by putting them in the mouth and their poor coordination of swallowing, lack of molars and the small size of their oesophagus puts them at a higher risk of accidental ingestion (4).

Coins, as with this case, are the most commonly ingested foreign objects in children and infants, accounting for up to 42% of cases (5,6). Other commonly ingested foreign bodies are batteries, food boluses, fish bones, marbles, pieces of plastic and glass materials(7). Fortunately, the majority of the foreign bodies pass through spontaneously with only about 10-20% needing interventions (2) . The obstructed foreign bodies tend to lodge in areas of physiological and pathological narrowing; they are most common in naturally narrow areas such as the upper oesophageal sphincter area, the level of the aortic arch and at the lower oesophageal sphincter area, and in areas of pre-existing oesophageal pathologies such as strictures and fistulas (3). Coins measuring greater than 23.5mm in diameter are more likely to be impacted in the oesophagus and those greater than 25 mm in diameter are unlikely to pass through the pylorus in children younger than 5 years old(2) The ingested coin in this case, had a diameter of 25.9mm and was in the superior part of the oesophagus at the C5/C6 region, which is consistent with the upper oesophageal sphincter area, where 74% of obstructions occur (8).

Care givers bring the majority of the children to the physician after witnessing a foreign body ingestion or if the child reports it, however over 40% of ingestions are estimated to be unwitnessed and unreported(7), as in this case, posing a diagnostic challenge because of the nonspecific and sometimes absent signs and symptoms. Clinicians need to have a high index of suspicion since less than 20% of patients present with symptoms that are specifically indicative of foreign body ingestion and 20-38% are asymptomatic altogether(9) . Careful history and examination are essential to the diagnosis.

Drooling of saliva and vomiting have been reported as the most common symptoms of oesophageal impactions (6); other symptoms include dysphagia, refusal to eat and respiratory symptoms such as wheezing, stridor or choking. Older children may be able to localise the sensation of something stuck in their neck or lower chest (10). Complete occlusion will result in more dramatic symptoms. Long standing oesophageal obstruction can cause weight loss due to reduced intake and recurrent aspiration pneumonia because of the poor handling of oral secretions (10).

Sialorrhea (drooling or excessive salivation) is normal in infants up to the age of 24 months because of their immature oral neuromuscular development and the lack of front teeth to serve as a dam(11). A sudden onset of sialorrhea in an older child should raise the suspicion of an acute pathology such as inflammation or infection in the mouth or an anatomical obstruction that impairs the ability of the child to swallow the saliva. The attending physician in this case, commented that the history of milk consumption prior to presentation and the absence of gagging and respiratory symptoms did not make him consider oesophageal obstruction as a possible cause of the drooling.

Dysphagia is a common sign in oesophageal ingestions and was a symptom in one third of cases in a study (6). The history of milk consumption without difficulty may suggest that the oesophagus was not completely obstructed at the time of consumption. Inflammation around the obstruction or movement of the foreign body may have led to a further occlusion resulting in the sialorrhea. It is also possible that the milk consumption was before the coin ingestion.

Gagging protects against swallowing unwanted objects by triggering contraction of the pharyngeal muscles. It would usually be expected in a small child swallowing a coin of about 25mm in diameter; it is possible that gagging was not witnessed and hence not reported.

Although more typical of foreign body inhalations, respiratory symptoms such as wheeze, stridor and dyspnoea have been reported with ingestions when large oesophageal foreign bodies compress against the trachea (11). The history of aphonia in this case is interesting and unusual as aphonia is more commonly seen with airway inhalations often in association with respiratory distress. There is another published case of a child with oesophageal foreign body ingestion and aphonia without respiratory distress. The aphonia was secondary to vocal cord dysfunction thought to result from compression of the recurrent laryngeal nerve that supplies the vocal cords (12).

Findings on examination are often unremarkable, as in this case, except when complications set in. The physical examination in a child with suspected oesophageal ingestion should assess the airway, vital signs and the ability to handle secretions. Pooling of saliva in the mouth may be suggestive of an obstruction whilst tenderness or swelling in the neck may indicate upper oesophageal perforation. Chest examination may reveal wheeze or stridor which can be suggestive of tracheal compression by an oesophageal foreign body. Abdominal examination may reveal signs of perforation or small bowel obstruction.

The main aim of investigations is to locate the foreign body. A handheld metal detector, as was used in this case, has been proven to be sensitive and specific in detecting metallic foreign bodies such as coins (13). It is however

less commonly used nowadays because radiographs are readily available and are more reliable in detecting metallic foreign bodies. A metal detector may still be useful in detecting materials that are metallic but not radiopaque such as aluminium e.g. flip top of the can of a soft drink (14).

Anteroposterior and lateral radiographs of the neck, chest and abdomen are advised in all patients with suspected foreign body ingestions, even if the foreign body is thought to be radiolucent. This is to investigate for the possibility of other swallowed objects or for indirect evidence of the radiolucent object e.g. air fluid level in the oesophagus or free air representing a perforation(10). If plain radiographs do not reveal foreign bodies in a symptomatic child with a strong suspicion of foreign body ingestion, diagnostic endoscopy, computed tomography (CT) or magnetic resonance imaging (MRI) may be considered.

Asymptomatic patients with blunt oesophageal foreign body ingestion like coins may be managed by close observation within the first 24 hours before intervention; 20-30% of coins have been observed to pass spontaneously during the observation period(10). Blunt objects shorter than 5cm, that have passed into the stomach can also generally be managed in an expectant manner in asymptomatic patients. The objects in the stomach can be removed endoscopically if still present after four weeks(10). Repeat radiographs can be helpful in determining the progression of a foreign body.

Magnets and disc batteries are exceptions. Multiple magnets can attract each other across layers of gastrointestinal mucosa, leading to pressure necrosis and perforations (10). Electric current from batteries can lead to liquefaction, ulceration and subsequent oesophageal perforation (16). Emergency removal of oesophageal magnets and disc batteries is advised (15,16).

Endoscopy is the procedure of choice for removing oesophageal foreign bodies; over 90% of foreign bodies are removed endoscopically without any complications (2). The speed of intervention is dependent on the nature, location, duration and ability to handle secretions. For instance, emergency interventions will be required for patients with compromised airway, inability to handle secretions, or patients who have swallowed sharp objects, button batteries or high-powered magnets because of the risk of perforations (10).

Conclusion

Early diagnosis of oesophageal foreign body ingestion is essential to preventing serious complications. This case highlights the diagnostic challenge when the ingestion is unwitnessed. It highlights the need for a high index of suspicion when young children present with unexplained and nonspecific gastrointestinal and respiratory symptoms. Drooling, dysphagia and respiratory symptoms are some of the common symptoms of oesophageal foreign body ingestion. Aphonia, although more common in laryngeal foreign bodies can occur very rarely in oesophageal foreign body ingestion.

When suspected, radiographs are helpful in locating and sometimes identifying the type of foreign bodies. Some blunt foreign bodies can be observed for spontaneous passage within 24 hours of ingestion, disc batteries and high power or multiple magnets need to be removed emergently because of the risk of perforation. Removal by endoscopy is the often the treatment of choice.

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