

Delayed Presentation of Button Battery Ingestion in a Child: A Case Report

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Abstract

Foreign body ingestion is quite common in the pediatric population, especially among those older than six months and younger than three years of age. The vast majority of these ingestions don't pose any risk to the child as most foreign bodies pass spontaneously through the gastrointestinal tract. However, this is not always the case.

Here, we report a 5-year-old child who presented with symptoms of epigastric pain and vomiting. She was initially presumed to be suffering from viral gastroenteritis but was subsequently found to have a significant foreign body (lodged button battery) in the esophagus, which was removed by urgent Esophagogastroduodenoscopy, and she then made an uneventful recovery.

This report puts forward the importance of considering button battery ingestion in the differential diagnosis among children re-attending with persistent respiratory or gastrointestinal symptoms.

Keywords: Button Battery; Foreign Body; Misdiagnosis; Esophagogastroduodenoscopy; Erosive Esophagitis

Introduction

Button batteries are small coin-like cells used in a variety of devices including kids' toys. If one of these got swallowed by a kid, it may either pass spontaneously through the gastrointestinal tract without any problem or get impacted (particularly in the esophagus) causing significant damage to the surrounding tissues. This damage may occur within few hours and it can be attributed to the electrical current of the battery, its alkaline solution, and the effect of local pressure necrosis. Local or systemic toxicity from the leakage of heavy metals such as mercury may also ensue [1,2].

Case Report

A five-year-old female presented with her mother to the emergency department of a university teaching hospital complaining of four days of abdominal pain associated with multiple episodes of vomiting. The family reported that she fell on her chest and abdomen four days back while walking down a set of stairs. They didn't give any history of foreign body ingestion. She was seen two days back in a public health care center with similar complaints, and her symptoms were assumed to be related to a viral illness (gastroenteritis). She was discharged on Paracetamol and Domperidone but in two days she was seen again in another public health care center for the same complaints, which were getting worse. Once again, her symptoms were assumed to be related to a viral illness or abdominal trauma. She was prescribed Paracetamol only and an ultrasound of her abdomen was requested.

However, due to the persistence of symptoms, her mother brought her to the emergency department. Her vital signs on arrival were as follows: temperature 37.9 Celsius, heart rate 116 beats per min, respiratory rate 22 breaths per minute; and blood pressure 111/54 millimeters of mercury. Her initial work-up included complete blood count, urea and electrolytes, C-reactive protein, troponin, amylase, lipase, and chest x-ray. The laboratory results showed leukocytosis and elevated level of C-reactive protein. The chest x-ray revealed a surprise for us: a double-contoured radiopaque body overlying the ninth thoracic vertebra (Figure 1). A lateral view confirmed the position of the foreign body to be inside the esophagus. When the family and the child were encountered with this finding, they denied any history of foreign body ingestion.

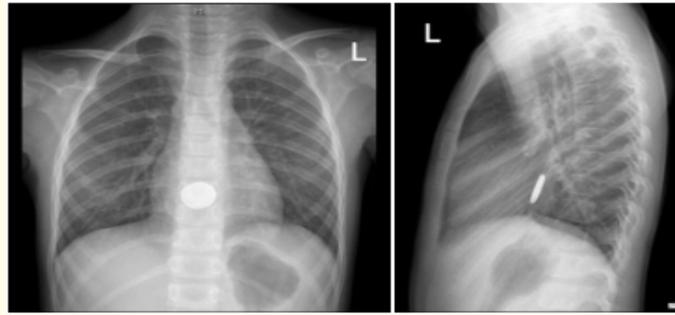


Figure 1: Posterior-anterior and lateral chest x-ray views showing a double-contoured rounded dense structure lodged in the esophagus.

The child underwent an urgent esophagogastroduodenoscopy, during which a lodged button battery was found at a distance of 23 - 24.5 centimeters from the incisors. The battery was causing semi-circular esophageal necrosis of 1.5-centimeter-long without perforation (Figure 2). It was removed gently with a raptor forceps and a nasogastric tube was inserted under direct vision without complications.

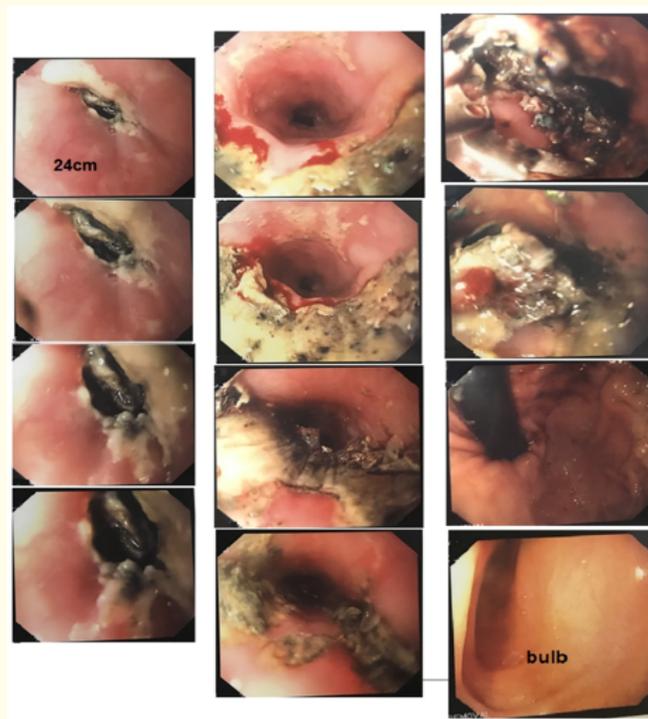


Figure 2: The EGD showed the lodged button battery and a semi-circular esophageal necrosis of 1.5 cm length without perforation.

After the procedure, the patient was admitted to the pediatric intensive care unit. Her condition improved there uneventfully, and she was discharged on the fourth day after admission with an appointment for follow-up.

Four weeks later, an upper gastrointestinal series with gastrografin contrast showed only minimal narrowing of the distal esophagus (less than 25% narrowing of the lumen) at the approximate location where the battery was previously found. A subsequent study six

months later showed a free and smooth passage of the contrast through the esophagus down to the stomach and a normal esophageal outline. There was no stricture or filling defect and no extravasation of contrast from the esophagus.

Discussion

The first report of a button battery ingestion in the pediatric population dates back to 1977. It has been estimated that these objects make less than 2% of the foreign bodies ingested by children. There are several types of them based on the chemical components used in their anodes or cathodes. They can contain mercury, lithium, zinc, or other potentially toxic materials, and most of them have alkaline solutions [2].

Infants and toddlers are more likely to ingest foreign bodies including button batteries [1,2]. These incidents may be unwitnessed by the family, and the child may also deny ingesting anything unusual. When symptoms of a lodged button battery start to develop, the diagnosis might be missed early on, especially if these symptoms are vague or imitative of more common illnesses such as gastroenteritis. Therefore, it is essential to keep a high index of suspicion in this age group and a low threshold to request an appropriate radiographic study, particularly in re-attenders with persistent respiratory or gastrointestinal symptoms [2,3].

Reported complications from button batteries lodged in the esophagus include esophageal stricture, esophageal perforation, injury of the recurrent laryngeal nerve, mediastinitis, formation of an aorto-esophageal fistula, and formation of a tracheoesophageal fistula [4]. The deadliest of all these is an aorto-esophageal fistula, which can happen even 18 days after the removal of the battery [5,6]. In our case, only minimal narrowing of the distal esophagus was observed one month after the incident, and this resolved completely five months later.

Conclusion

It is critically important to reach the diagnosis of an impacted button battery early on in order to avoid the severe complications that may result from a delay in proper treatment. This becomes a challenge when a clear history of foreign body ingestion is not given and the child's presentation resembles more common illnesses. Therefore, a high index of suspicion should be entertained and investigated, particularly in re-attenders with persistent respiratory or gastrointestinal symptoms.

Conflict of Interest

The authors declare no conflict of interests.

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