Batteries Not Included

Abstract:
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We report two cases of oesophageal lodgement of ingested button batteries (BB) in young children. In one case the diagnosis and subsequent treatment was made in a timely fashion and the patient suffered no sequelae. In the second case there was a delay in diagnosis and the patient subsequently suffered both early and late complications. The purpose of this report is to highlight the importance of the correct management of suspected BB ingestion.

Case 1
A 16 month-old female ingested a BB which was witnessed. She presented to the Accident and Emergency department within one hour of ingestion. On arrival she was noted to have a cough but was systemically well. A chest radiograph (CXR) confirmed oesophageal lodgement of the battery (Figure 1). An emergency oesophagoscopy was performed and the battery was successfully removed. Despite prompt treatment mucosal erosion was observed. She made an uneventful recovery and a contrast study performed prior to her discharge was normal. She has been discharged to the care of her GP with no anticipated sequelae.

Case 2
A 10 month-old male presented to another institution 2 hours following ingestion of a foreign body – presumed to be a coin. The child was systemically well. A CXR confirmed oesophageal lodgement of the foreign body. The child was transferred to our institution for further management. A repeat CXR confirmed the foreign body remained lodged. The appearances were consistent with a BB. An emergency oesophagoscopy was performed (18 hours post ingestion of the BB). Mucosal burn injury was observed but was not circumferential. The BB was embedded in the wall of the oesophagus and was extracted with difficulty. An initial CXR post procedure was normal. A repeat CXR was performed the following morning and demonstrated a right apical pneumothorax. On induction of anaesthesia for the chest drain insertion, the child decompensated and immediate needle decompression was performed with insertion of the chest drain. Subsequent contrast study showed right postero-lateral perforation of oesophagus (Figure 2). The patient was managed conservatively and a repeat contrast study was carried out after 12 days demonstrated no leak. The child was commenced oral feeds and was discharged home well.

He has a repeat contrast study with a 50% stenosis of his oesophagus at the site of lodgement of the battery lodgement. The child remains well and remains asymptomatic. He will be reviewed in the clinic in 6 months time. He may need intervention for this stenosis if he becomes symptomatic.

Discussion
BB’s lodged in the oesophagus and airways pose the greatest risk of fatal, life-threatening or disabling outcomes. Delays in diagnosis undoubtedly lead to more severe complications and death. All deaths and the majority of significant or major complications occurred in children under 4 years of age. Lodged BB in the oesophagus can rapidly cause tissue damage by electrical burns, chemical burns and pressure necrosis. Where mucosal damage is noted on endoscopy, the child should be monitored closely and complications anticipated. Perforations and fistulas may take up to 18 days to develop and oesophageal strictures may take months to manifest. Without observed ingestion, a circular radio-opaque foreign body should be treated with a high index of suspicion for BB ingestion in the paediatric population.

In 2010, Litovitz et al developed comprehensive management guidelines. These have been adapted by the National Battery Ingestion Hotline at the National Capital Poison Centre, in the USA. A radiograph is not required by all patients with ingested BB. A child over 12 years of age with a single battery ingested of less than 12mm, with no pre-existing oesophageal disease and who is completely asymptomatic can be managed safely without an x-ray. BBs located above the range of the radiograph have been missed. In patients with oesophageal lodgement of BB, expedient removal of BB is essential for a positive outcome (within two hours of ingestion). Once the BB has passed distal to the oesophagus, it can be left to pass spontaneously. In patients under 6 years of age, further imaging maybe warranted at 4 days post ingestion. If the battery is still in the stomach, endoscopic retrieval should be undertaken at that point. If a BB has passed distal to the oesophagus but a magnet was co-ingested, then the magnet should be retrieved endoscopically. If that is not possible then surgery is warranted, even if the patient is asymptomatic.

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References