Time; not money
Timothy A Little, Rachel Care, Dilhan Cabraal

Case presentation
A 22-month-old girl presented to the emergency department overnight with a 3-day history of cough productive of yellow sputum and some shortness of breath. The cough came in paroxysms and on the day of presentation was associated with post-tussive vomiting. Her mother reported that her oral intake was reduced, but still was still producing four to five wet nappies per day.

Examination revealed crepitations at the right lung base on auscultation. The diagnosis of pneumonia was reached and a chest radiograph was obtained as part of the work-up. This revealed a disk-shaped 2cm-diameter foreign body in the oesophagus. See Figure 1.

There was no history of ingestion or contact with any disk-shaped metallic objects and therefore no indication of time of ingestion.

Figure 1. Chest radiographs showing foreign body in the child’s oesophagus

What is this foreign body and what is the next appropriate step in this child’s management?
Answer and Discussion

The double edge on the AP radiograph and step visible on the lateral film should be considered pathognomonic of button battery ingestion.¹

The foreign body was initially mistaken for a coin and the child was admitted for observation and consideration of endoscopy first thing in the morning. On evaluation by more senior clinicians in the morning, ingestion of a button battery was immediately suspected and arrangements for its retrieval were expedited.

A button battery was visualised by direct oesophagoscopy in the mid-oesophagus with mucosal ulceration, granulation and stricture. No perforation was visible, but extraction was difficult. A nasogastric tube was placed and the child made an uneventful recovery. A barium swallow on day 2 post-op showed no leak and no evidence of residual stricture or mucosal abnormality.

Button batteries are not uncommon among ingested foreign bodies in the paediatric age group and can have serious consequences if not retrieved in a timely fashion. There is extensive previous experience in this department with nasal insertion of button batteries.² In other centres, significant complications of oral ingestion have been reported, including aorto-oesophageal fistula,³ oesophageal perforation⁴ and vocal cord paralysis.¹

The moist membranes of the mucosa predispose to the completion of a circuit between anode and cathode and erosion of the casing resulting in leakage of battery contents, both of which cause significant trauma by way of electrical, thermal and chemical burns.

The damage can occur rapidly, as quickly as 90 minutes.² The size of the battery is likely to play a role in itself, regardless of its dangerous properties any object lodged in the oesophagus has the potential to cause pressure necrosis.

Conclusion

The appearances of the item on plain films (Figure 1) are pathognomonic of button battery ingestion. This and the unknown time of its ingestion should have led to immediate referral for emergency endoscopy overnight.

Those seeing such radiographs (e.g. ED doctors, on-call junior staff) should be vigilant of the appearances and be aware of the potentially significant consequences of delaying removal.

<table>
<thead>
<tr>
<th>Learning points:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Button battery ingestion must be included in the list of differentials in foreign body ingestion by children</td>
</tr>
<tr>
<td>2. On an erect chest film, the double edge in AP view and step in lateral view (if taken) should be recognised as being pathognomonic of button battery ingestion requiring urgent retrieval</td>
</tr>
</tbody>
</table>
Author information: Timothy A Little, Junior Registrar, Department of General Surgery, Palmerston North Hospital, Palmerston North; Rachel Care, SET II Trainee, Department of Otorhinolaryngology, Dunedin Public Hospital, Dunedin; Dilhan Cabraal, Consultant, Department of Otorhinolaryngology, Palmerston North Hospital, Palmerston North

Acknowledgement: The authors thank the patient and her mother who gave us permission for the case to be presented.

Correspondence: Tim Little, Junior Registrar, Department of General Surgery, Palmerston North Hospital, Private Bag 11036, Manawatu Mail Centre, Palmerston North 4442, New Zealand. Email: tim.little@midcentraldhb.govt.nz

References: