

Letter to the Editor

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Accidental ingestion of lithium batteries in elderly patient: a therapeutic challenge

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Dear Editor,

Accidental foreign bodies ingestion represents a medical problem not only in children but even in the elderly population aggravated by visual or neurologic disturbances related to the age.¹ We present a 78-year-old man with severe myopia who was at home lying in his bed when, inadvertently, without glasses, ingested two button lithium batteries of about 2cm in diameter, placed on the nightstand near the TV remote control, believing that they were effervescent tablets that he normally assumed in the morning. The day after, he reached the nearest emergency room, where a radiograph was performed (Figure 1). The batteries were now located in the presumed ileo-cecal region, with fluid-air levels in the mesogastric site. The radiograph excluded intra-abdominal free air and abdominal sonography excluded fluid collection. The patient was totally asymptomatic, without any clinical signs of occlusion or intestinal perforation. The abdominal radiographs on day 2 and 3 showed the slow progression of the batteries through the ileo-cecal valve, stopping in correspondence of caecum or ascending colon, despite oral treatment with laxative. Finally, a colonoscopy was performed and the endoscopic view showed two fused black-colored disk batteries in the ascending colon which they were retrieved with a Dormia basket. The patient was discharged 24 hours after the procedure without any complication.

Over the last years, the increasing use of lithium batteries in daily practice has opened new challenges, because of their dangerousness in terms of morbidity and mortality rates. In the majority of cases the tissue damages are related to long-term exposure of mucosa to foreign body. The consequences can be ulcerations, perforations with fistula formation and damage to the surrounding anatomical

structures.² The most involved tracts of the digestive system are oesophagus and stomach. Three factors are commonly involved in tissue damage, especially in the oesophagus: 1) creation of an external current by electrolysis that generates hydroxide at the battery's negative pole with colliquation of the tissue; 2) leakage of an alkaline electrolyte; 3) direct pressure necrosis. The 20mm diameter lithium batteries have high voltage (3V cells as compared with 1.5V for other disk batteries) and a higher capacitance for which they are able to generate a more powerful current with higher local hydrolysis and hydroxide production, more rapidly, than other button cells.³ The most severe oesophageal burns (and subsequent perforations) occur adjacent to the negative battery pole. A simple clinical guide is represented by the 3-Ns mnemonic "Negative–Narrow–Necrotic": the negative battery pole, identifiable as the narrowest side on lateral X-ray, produces the most severe, necrotic injury.³ Tissue damage can also continue after endoscopic battery removal for days to weeks due to residual alkali or weakened tissues. It has also to be considered that the ingestion of lithium batteries could lead to their intra-luminal degradation during gastrointestinal passage with consequently release of alkali or heavy metals and intestinal absorption of lithium with systemic symptoms.⁴ However, the most serious and important battery ingestion complications are related to local corrosive injury rather than systemic poisoning from battery contents.⁴ On the other hand, the button batteries, depending on their size and intestinal peristalsis, may pass beyond the pylorus and the ileo-cecal valve uneventfully and to be eliminated with the stool. The management of swallowed button batteries in elderly patients remains unclear, especially when they pass through Treitz ligament. A close follow-up in the first 48–72hours is mandatory. Endoscopic removal should be considered the first choice when possible, even in such difficult situations.⁵ However, surgery should be referred to patients with clear signs of perforation. Our patient, despite a delay in diagnosis, had a favourable outcome with a conservative approach.

Sincerely,

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References

1. Goh BK, Chow PK, Quah HM, et al. Perforation of the gastrointestinal tract secondary to ingestion of foreign bodies. *World J Surg.* 2006;30(3):372–7. doi: 10.1007/s00268-005-0490-2.
2. Völker J, Völker C, Schendzielorz P, et al. Pathophysiology of esophageal impairment due to button battery ingestion. *Int J Pediatr Otorhinolaryngol.* 2017;100:77–85. doi: 10.1016/j.ijporl.2017.06.030.
3. Litovitz T, Whitaker N, Clark L, et al. Emerging battery-ingestion hazard: Clinical implications. *Pediatrics.* 2010;125(6):1168–77. doi: 10.1542/peds.2009-3037.
4. Mallon PT, White JS, Thompson RL. Systemic absorption of lithium following ingestion of a lithium button battery. *Hum Exp Toxicol.* 2004;23(4):193–5. doi: 10.1191/0960327104ht433oa.
5. La Greca G, Pesce A, Di Blasi M, et al. Colonoscopic removal of a large safety pin opened inside the gut and hooked to the ileocolic valve: a unique case. *Gastrointest Endosc.* 2016;83(4):847–848. doi: 10.1016/j.gie.2015.10.004.

Figure 1: Abdomen X-ray showed the button batteries located in the presumed ileo-cecal region

