



Pediatric Button Battery Ingestion Fact Sheet

Prevention

According to the National Capital Poison Center, the number of fatal or debilitating button battery ingestions occurring in young children has dramatically increased within the last two decades. Much of this increase is thought to be due to mass production of lithium cell batteries which produce twice the voltage when compared with other button batteries. Tissue injury from button batteries is thought to occur through several mechanisms including pressure necrosis; battery leakage; and electrolysis of tissue from generated current across the battery. Electrolysis results in the generation of a hydroxide by product which may cause corrosive damage to the gastrointestinal tract. Approximately twelve percent of patients under 6 years of age who ingest a large diameter lithium button battery will experience serious complications or death as a result of the ingestion (Litovitz, 2010).

Anticipatory guidance is a critically important aspect in preventing young children from button battery ingestion. Parents should be instructed to never leave batteries sitting out where young children can reach them. Parents should check all household devices to be sure battery compartments are secured with a child proof resistant locking mechanism. Specific items to check include remote controls, toys, cameras, calculators, PDA's, portable video games, cell phones, flashing shoes, key chains, talking books, portable stereos, and any household items which require battery power. The most dangerous batteries when ingested include the 20 mm lithium cell batteries. These can become lodged within the child's esophagus and cause injury and severe complications in as little as two hours (Jarugula, 2011). Older children should be instructed to never put batteries in their mouth while replacing, changing, or testing batteries.

Identification of Ingestion

Should parents' suspect or witness battery ingestion, the parents should immediately seek medical care/guidance. Guidance is available 24 hours a day from the poison control center at 1-800-222-1222. Prompt medical care is critical, as severe damage can occur in as little as two hours. If the child exhibit signs of airway distress such as shortness of breath, dyspnea, dysphagia, or cyanosis 911 should be called for immediate assistance. If a battery is swallowed the child should not eat or drink until an x-ray is obtained and the location of the battery is confirmed to be distal to the esophagus. Any esophageal battery should be removed emergently. Ingestions of button batteries may not be witnessed. Symptoms, when present, may be non-specific. It is therefore important that physicians consider battery ingestion in the differential diagnosis of a child with choking, hemoptysis, or tarry stool.

Any pediatric patient suspected of swallowing a battery should be referred for immediate x-ray of the esophagus, neck, and abdomen to determine the battery's location (Poison control, 2011). X-ray immediately as batteries lodged within the esophagus can cause burns within two hours.

Potential Complications

Potential complications can include hemorrhage secondary to esophageal battery impaction, fistula development between the esophagus and the trachea or aorta, and esophageal strictures (Brumbaugh, 2011). Upon a review of 13 fatal pediatric button battery ingestion cases, 10 fatalities were due to hemorrhage (Brumbaugh, 2011).

Medical Management

Batteries lodged in the esophagus should be promptly removed. Batteries distal to the esophagus may be monitored for passage if the child is completely asymptomatic.

Pediatric patients who present with hemoptysis in the setting of button battery ingestion (or in the weeks following button battery removal) may have impending catastrophic hemorrhage, even when the episode appears minor. This “sentinel bleed” should be considered an emergency which necessitates immediate stabilization and procession to surgery for direct visualization of the upper GI tract.

Neither induced vomiting or assays of the blood or urine for mercury or other battery ingredients are recommended (Poison control, 2011).

A comprehensive treatment guide and algorithm is available at www.poison.org/battery/guideline.asp.

References

Brumbaugh, D. E., Colson, S. B., Sandoval, J. A., Karrer, F. M., Bealer, J.F., Litovitz, T., & Kramer, R. E. (2011). Management of button battery-induced hemorrhage in children. JPGN, 52, 585-589.

Jarugula, R. & Dorofaeff, T. (2011). Oesophageal button battery injuries: Think again. Emergency Medicine Australasia, 23, 220-223.

Litovitz, T., Whitaker, N., & Clark, L. (2010). Preventing battery ingestions: An analysis of 8648 cases. Pediatrics, 125, 1178-1183.

National Capital Poison Center. (2011). NBIH button battery ingestion triage and treatment guideline. Poison Help [On-line]. Available: www.poison.org/battery/guideline.asp

National Capital Poison Center. (2011). Safety tips for button batteries. Poison Help [On-line]. Available: www.poison.org/battery/tips.asp

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