Button Battery Injuries in Children: A Growing Risk

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More than 3,500 button batteries are ingested annually in the United States. From 1990 to 2009, the number of battery-related emergency department visits nationally increased, possibly as often as one visit every three hours. Between 1985 and 2009, there was a 6.7-fold increase in button battery ingestions that resulted in major or fatal outcomes. Many otherwise healthy children have suffered serious injury from button batteries that may require major surgery such as tracheostomy and/or gastrostomy tube insertion or even death. It is a mistake to assume that every battery-powered product that enters the household is safe for use by children. In many products, the battery is easily accessible or can fall out when the product is dropped.

With the increasing use in electronics, more button batteries are found in the home setting. Items include remote controls, thermometers, games and toys, hearing aids, calculators, bathroom scales, musical greeting cards, key fobs, electronic jewelry, cameras, and holiday ornaments, among many others. For those who evaluate children who ingest button batteries, the challenge is that children can be asymptomatic or present with symptoms similar to those of a common viral infection. When a button battery is placed in the nasal cavity or the ear canal, drainage or pain may be noted. Non-specific symptoms combined with the likelihood of an unwitnessed ingestion event can lead to a delay in diagnosis and even greater injury. When lodged in the body, the electric current in a button battery rapidly increases the pH of the tissue adjacent to the battery, causing significant tissue injury even within two hours.

Batteries that are lodged in the nasal cavity can cause nasal mucosal injury, periorbital cellulitis, scar tissue formation and nasal septal perforation. Injuries in the ear canal include hearing loss, tympanic membrane perforation, and facial nerve paralysis. Esophageal button battery injuries can include esophageal perforation, mediastinitis, vocal cord paralysis, tracheoesophageal fistula, esophageal stricture, or death caused by a hemorrhage of an aortoesophageal fistula.

If suspicion of a button battery placed inside the body exists, the child needs to be taken immediately to an emergency room. Healthcare professionals in the primary care, urgent care, and emergency room setting need to consider that any metallic foreign body in the nose, ear canal, or esophagus is a button battery until proven otherwise. The diagnosis can be confirmed on a two-view x-ray, which from a distance can sometimes be mistaken for a more commonly ingested foreign body, a coin. See Figures 3 and 4.

The treatment for a button battery stuck within the body is emergent removal in order to prevent further injury. Additionally, immediate assessment of the acute injury and surveillance for long-term, delayed complications is necessary.

Parents and caregivers need to be aware of this household risk to ensure that button batteries and any devices that do not contain them in a secured compartment, are kept out of the reach of young children. We can all do our part to help eliminate these injuries in children through the education of others.

For more information please visit NationwideChildrens.org/Button-Battery-Safety.

Figure 1: Endoscopic view of button battery injury to nasal septum in right nasal cavity of a child.

Figure 2: Rigid esophagoscopy showing button battery injury extending into the muscular layer of esophagus in a child.

Figure 3: Double ring, or halo sign, of a button battery in the esophagus of a child.

Figure 4: Homogenous appearance of a coin in the esophagus of a child.

