

Disc Battery Ingestion Poses Hazards to Kids

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by Nancy Walsh, Staff Writer, MedPage Today
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Children accidentally swallowing disc batteries -- an increasing danger in our electronic-device-laden society -- has the potential for serious and rapid esophageal damage, a small study indicated.

In a retrospective chart review of ten patients, seven children experienced extensive esophageal damage after ingestion of a battery, including injury to the muscularis and even perforation in two cases, according to Stanley J. Kimball, DO, of Mount Carmel Health System in Columbus, Ohio, and colleagues.

Patients ranged in age from 9.5 months to 9.5 years (mean age 3.2 years), and their hospital stays ranged from one day to an entire month (mean stay 6.9 days), Kimball and colleagues reported in the September *Archives of Otolaryngology-Head & Neck Surgery*.

The American Association of Poison Control Centers reported a total of 2,063 disc battery ingestions in 1998; by 2006, that number increased 80%, according to background supplied by the authors.

Esophageal injury associated with exposure to the alkaline side of a disc battery results from leaking alkaline contents that cause liquefactive necrosis, as well as from electrical discharge causing low-voltage burns, and pressure necrosis to the tissue, according to Kimball and co-authors.

And injuries can occur very quickly. Two of the patients in the review were seen within three hours of accidentally swallowing a disc battery -- yet severe erosion and

transmural necrosis were already present, and one child seen within four hours of ingesting a battery had developed esophageal stenosis.

Eight of the patients underwent direct laryngoscopy, bronchoscopy, and esophagoscopy for retrieval of the ingested battery, and the other two had rigid esophagoscopy.

In two cases there was considerable delay in diagnosis. One of these cases was a 9-month-old girl who developed fever, otalgia, and anorexia and a persistent cough that lasted for a month.

On admission, she underwent radiography and CT scanning, which revealed a foreign body in the thoracic esophagus and narrowing of the trachea.

The battery was removed, but ulceration of the tissue and compression of the trachea were found, so she then had an esophagram which identified a small area of perforation.

A nasogastric tube was inserted to stent the injured area and for feeding. This remained in place for a week, and six weeks later a follow-up esophagram showed a focal area of 50% narrowing which was relieved by balloon dilatation.

The second case in which there was delayed diagnosis was a 13-month-old boy who had mild respiratory distress and otitis media for a week, until a chest x-ray revealed a foreign body at the thoracic inlet.

After evaluation by Kimball's team, the child underwent emergency endoscopy, which revealed complete perforation of the anterior esophagus and the posterior trachea.

The tracheoesophageal fistula that developed was reassessed several times during the subsequent weeks, and 19 days after removal of the disc he underwent tracheal reanastomosis and primary repair of the perforation.

He was discharged from the hospital after a month, but was readmitted seven times during the subsequent three months for respiratory distress.

Granulation tissue was removed each time and mitomycin C applied, but progressive dysphagia developed and further evaluation revealed a dime in the cervical esophagus.

More than three years later the child continued to have croup-like episodes and reflux esophagitis requiring medical therapy.

The authors stated that they found it "surprising" that some clinicians recommend observation following ingestion of a disc battery, given that life-threatening complications can ensue.

They recommended a high index of suspicion for unexplained symptoms -- and if a disc battery is seen on a chest x-ray they advised an emergency esophagoscopy.

Bronchoscopy can then help evaluate the tracheal wall, and an esophagram may be needed to identify areas of perforation.

Conservative medical management may then suffice if the perforation is appearing to heal spontaneously, but if it persists for several weeks, surgery should be considered.

"A multidisciplinary approach involving otolaryngology and pediatric surgery can be very helpful, especially when a tracheoesophageal fistula and/or uncontained perforation is identified," the authors observed.

Parents need to be made aware of the hazards of these small batteries, according to Jessica Lim, MD, of Lenox Hill Hospital in New York City.

"These batteries must be kept out of reach of small children," advised Lim, who was not involved in the study.

"Button battery chambers in electronic items need to be made childproof. Parents must be especially cautious in toys that use these batteries," she stressed.

This article was developed in collaboration with ABC News.