Swallowed batteries

Button batteries are easy to swallow. There are, in the main, three reasons why you might swallow one. (1) You're a preschool child and you put things in your mouth. (2) You're an adult and you hold things in your mouth to free your hands. (3) You're crazy. If you swallow your battery in the United States and get reported to the National Button Battery Hotline and Registry there's about a 62% chance you'll be in the first of these categories.

The hotline and registry was set up in Washington DC in 1982 and provides a national service. Their first 114 cases were reported in 1985¹ and a recent paper (Toby Litovitz and Barbara Schmitz, *Pediatrics* 1992; 89: 747-57) is based on the next 2382 cases reported over the seven years from July 1983 to June 1990. In some states there were up to 8.5 cases per million population yearly and it is estimated that at least 2100 people each year in the United States swallow batteries. About 62% of them are aged 5 years or less and about 14% between 6 and 12 years. Forgetful old age (60-89 years) accounts for about 10% but only 1.3% of cases were thought to have suicide in mind. Hearing aids were the most common source of the batteries, often a child's own aid. In almost 12% of cases the battery was apparently mistaken for a pill.

The chemical basis of the battery was often not known but manganese dioxide and zinc/air each accounted for about 30% of all cases, 25% were mercuric oxide, 17% silver oxide, and 0.4% lithium. There were no fatalities in this series. Two patients, a 10 month old girl and a 3 year old boy, developed oesophageal strictures. Both had swallowed large batteries, 20 and 23 mm in diameter (the most common battery sizes were 11.6 and 7.9 mm), which had stuck in the oesophagus.

A battery which traverses the oesophagus will almost certainly find its way into the stool. In children more than 99% are passed within 10 days. Only 10% of patients had symptoms, usually mild and gastrointestinal (vomiting, pain, or dark or bloody stools) but the only serious morbidity was in the two children with oesophageal stricture. There was no clinical mercury toxicity even though 25% of the batteries contained mercuric oxide and six of these burst in the gut.

The authors offer a six point management protocol based on their experience:

- (1) Always perform an x ray to locate the battery.
- (2) Remove oesophageal batteries endoscopically as soon as possible.
- (3) Identify large batteries (15 mm or more) if possible. ? mercury containing. Smaller batteries need not be identified unless there is radiological evidence that they have ruptured.
- (4) Leave batteries distal to the oesophagus *unless*: (a) gut injury (bleeding, pain, and tenderness), (b) large battery fails to pass pylorus. Then consider endoscopy or surgery.
- (5) Watch for appearance of battery in stool *but*: (a) large battery, young child (6 years or less) – in stomach after 48 hours – remove, (b) large mercuric oxide cells – perform an x ray once or twice weekly. ? disintegration of cell.
- (6) Mercuric oxide cells – check blood and urine mercury if cell splits open.

Obviously it would be better if the batteries weren't swallowed in the first place. Manufacturers are urged to make it more difficult for children to remove batteries from their products, especially toys and hearing aids but also other items, and parents of children with hearing aids should be warned of the danger.

ARCHIVIST

¹ Litovitz TL. Battery ingestions, product accessibility and clinical course. *Pediatrics* 1985; 75: 469-76.