Case Report

Tracheo-Esophageal Fistula After Disk Battery Ingestion

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Abstract

Foreign body ingestion is a common complaint in the pediatric emergency departments. Esophageal foreign body is a potentially serious cause of morbidity and mortality in children. Here we report an interesting case of disk battery ingestion resulting tracheo-esophageal fistula (TEF). The surgery for repair of TEF was done one month after ingestion. A brief review of the diagnosis and management of esophageal foreign bodies is presented with particular focus on ingested disk batteries.

Keywords: Esophageal Foreign Body ● Disk Battery ● Tracheo-Esophageal Fistula

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Introduction

Esophageal foreign bodies are a common and potentially serious cause of morbidity and mortality in children. Common presenting symptoms of are excessive drooling, poor feeding, dysphagia, and vomiting. Occasionally, esophageal foreign bodies, particularly those with a long duration in the esophagus, may cause respiratory symptoms, such as cough, stridor, and wheezing. Early published case reports of disk battery ingestions were concerned with serious sequelae (e.g. esophageal perforation, aortic perforation with exsanguinations, and TEF). From these reports, recommendations were made for aggressive management, including surgical removal. Information gained from the National Button Battery Investigation study combined with more recent case reports and series involving successful conservative management has shown that these ingestions usually are benign.

Case report

A 3 year old 9 kg male patient was admitted to our hospital for evaluation of complications of disk battery ingestion. The battery had been extracted one week after ingestion in another hospital. Chest x-ray and babygram didn’t show any complication. Ten days after hospitalization, the patient was visited by a thoracic surgeon. The nasogastric tube passed easily to the stomach; therefore the patient was considered for conservative therapy. He was rehospitalized four days later due to hematemesis and fever. Bronchoscopy and esophagoscopy were done and injected methylene blue through esophagus was detected in trachea. The diagnosis was TEF in proximal 1/3 of the esophagus. Feeding jejunostomy was placed because of esophageal perforation and erosive esophagitis. The patient couldn’t tolerate feeding through jejunostomy and was scheduled for reevaluation under general anesthesia. Induction and maintenance of anesthesia was achieved with slow inhalation of isoflurane. After rigid bronchoscopy and esophagoscopy, a catheter was passed through the fistula. The patient was intubated with difficulty and due to gastric distention the endotracheal tube was replaced and passed below TEF. The incision was made at the left side of the neck and the fistula was repaired with placement of a muscular flap between the trachea and the esophagus. The patient was stable during anesthesia and was easily extubated. The patient spent the first 24 hours in the PICU and was discharged uneventfully ten days after surgery. One week after discharge the jejunostomy tube was extracted. The patient was placed on oral feeding without any trouble.

Discussion

Foreign body ingestion is a potentially serious problem that peaks in children 6 months to 3 years of age. Cough or stridor are unusual symptoms of esophageal foreign bodies and are probably due to narrowing of the trachea. The foreign body may even erode the wall of the esophagus and create a TEF. Esophageal perforation is a true emergency, prompting a diagnosis in less than 24 hours, if a good outcome is to be assured. There is a mortality of 10% with early diagnosis and that mortality goes up to 50% with late diagnosis. Surgical treatment is the mainstay of therapy traditionally, but recently there has been a trend toward more conservative medical management. Disk batteries do not usually cause problems unless they become lodged in the gastrointestinal tract. The most common place for them to become lodged, resulting in clinical sequelae, is the esophagus. Batteries pass through GI tract in a relatively short period of time: 23% within 24 hours, 61% within 48 hours, 78% within 72 hours, and 86% within 96 hours. In only 1%, like our patient, it may take more than 2 weeks. In our case the disk battery was extracted from esophagus one week after ingestion. So it is among the rare cases that disk battery didn't pass through the esophagus after one week. The likelihood that a disk battery will lodge in the esophagus is a function of the patient's age and the size of the battery. Esophageal damage can occur in a relatively short period of time when a disk battery is lodged in the esophagus. Liquefaction necrosis may occur because sodium hydroxide is generated by the current produced by the battery. Perforation has occurred as rapidly as 6 hours after ingestion.
Therefore, early diagnosis and extraction of disk batteries lodged in gastrointestinal tract is very important to reduce the probability of complications and morbidity.

References