DIAGNOSIS OF PEDIATRIC FOREIGN BODY INGESTION:
CLINICAL PRESENTATION, PHYSICAL EXAMINATION, AND RADIOLOGIC FINDINGS

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INTRODUCTION

Pediatric foreign body ingestion is a common and serious problem worldwide, particularly among children between the ages of 6 months and 3 years. The American Association of Poison Control reported 79,738 cases of pediatric foreign body ingestion in 2012. In the majority of cases, foreign body ingestions are brought to medical attention after a caregiver witnesses the ingestion or a choking event. However, diagnosis may be complicated by delayed presentation or misdiagnosis in patients who are asymptomatic or have non-specific symptoms. While most foreign bodies pass through the alimentary tract uneventfully, in severe cases, foreign body ingestion can lead to significant morbidity and mortality. Therefore, prompt diagnosis of foreign body ingestion and removal via esophagoscopy is crucial to prevent consequent morbidity and mortality.

Generally, the presence of a witnessed foreign body ingestion by a caregiver, radiopaque object on imaging, and/or a high level of clinical suspicion dictate which children ultimately undergo esophagoscopy. Previous studies have examined the frequency of clinical symptoms, physical signs, and/or radiographic findings in children with suspected foreign body ingestion. However, remarkably little exists in the literature about the sensitivity and specificity of these entities. The primary aims of this study were (1) to describe the clinical, physical examination, and radiologic findings in children presenting with suspected esophageal foreign bodies, and (2) to examine the predictive value of history, physical examination, and radiologic studies in children with suspected foreign body ingestion.

METHODS

• IRB-approved retrospective chart review
• Tertiary-care academic children’s hospital
• All children who underwent injection esophagoscopy for suspected foreign body ingestion between November 2006 and October 2013
• Main outcome measures: 1) Demographics 2) Clinical history 3) Physical examination findings 4) Radiologic findings 5) Esophagoscopy findings 6) Complications
• Descriptive statistics, univariate, and multivariable logistic regression analyses were performed.

RESULTS

• 543 patients were included in the study
• 497 (92%) patients had a foreign body on esophagoscopy
• Ingestion was witnessed in 23% of cases.
• Most patients with foreign bodies had normal physical examinations (76%).
• 494/543 (91%) patients received preoperative chest radiographs, 412 (83%) of which demonstrated radiopaque foreign bodies.
• Sensitivity and specificity of one or more findings on history and physical examination, and imaging were 99% and 0%, 21% and 76%, 83% and 100%, respectively.
• Having both a positive history and physical examination had a sensitivity of 20% and 76%, respectively.

DISCUSSION

Ingestion of foreign bodies by children is common and can lead to significant morbidity and mortality. Therefore, rapid diagnosis and treatment is important. A total of 543 cases with a history suggestive of foreign body ingestion were included in this study, making it one of the largest retrospective medical record reviews on this subject.

Most patients in our study were symptomatic at the time of presentation (98%). Physical examination was normal in the majority of patients (76%). The majority of foreign bodies in this study were radiopaque (83%). Using multivariable logistic regression analysis, drooling was independently associated with increased odds of having a foreign body. In general, specificity increased and sensitivity decreased with an increasing requirement for number of combined positive findings. Few other studies have considered the value of combined findings in the diagnosis of foreign body ingestion. Our multivariable logistic regression model led to a diagnostic sensitivity of 81% and a specificity of 54%.

Limitations of the present study includes the retrospective nature of data collection, lack of access to reports and notes from outside hospitals, and relatively small sample size in the negative foreign body group. It would be valuable to compare our data to future studies assessing the predictive value of various diagnostic findings at other major tertiary referral centers.

CONCLUSIONS

• Most patients with esophageal foreign bodies found on endoscopy are symptomatic.
• Most children with suspected ingestions and negative endoscopies also have a positive clinical history (false positives).
• Although many patients will have a normal physical examination, an abnormal exam should increase suspicion for a foreign body.
• Most esophageal foreign bodies are coins and are radiopaque.
• While a normal chest radiograph does not rule out a foreign body, radiological evaluation remains the single most useful diagnostic tool, with a high sensitivity and specificity.
• A careful history, physical exam, and radiological evaluation are critical to prevent a delayed diagnosis of a foreign body.
• Physicians must have a high level of suspicion and a low threshold to pursue further diagnostic studies and/or esophagoscopy.
• When performed by an experienced physician, esophagoscopy is a safe and effective procedure.

REFERENCES


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