

Role of Plain Radiograph in Localization of Ingested Foreign Body – A Pediatric Case Study of Hair Pin Ingestion in Clinical Settings of AFIRI–MH

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Abstract

The accidental ingestion of food, toys, and small household objects is a common pediatric complaint, resulting in many clinics and emergency department visits as well as hospitalizations. Infants and toddlers explore their world by putting objects in their mouths, placing themselves at risk for having foreign bodies in the esophagus or respiratory tract. In any case, early diagnosis and prompt management are mandatory to avoid severe and life-threatening complications. Radiologists have an important role in revealing the presence, dimension, nature, and relationship with anatomic structures of a FB; selecting the most appropriate imaging modality; and enabling the best therapeutic choice.

Introduction

Foreign bodies (FBs) are uncommon radiological findings but remain an important reason for admittance to emergency department.

FBs may be inhaled, ingested, or inserted into a body cavity, or they may be deposited into the body by a traumatic or iatrogenic injury [1].

Inhalation of FBs is frequent among infants and preschool children. It has been estimated that approximately 500 children die each year in the United States owing to inhalation of FBs. Complications associated with a delayed diagnosis are pneumonia, atelectasis, bronchiectasis, and bronchial fistula [2,3].

Ingestion is the most common occurrence, and it has been estimated that up to 1500 deaths occur annually in the United States owing to ingestion of FBs. Most of these cases occur in pediatric population before the age of 6 years and in adults between 25 and 44 years.

In most cases, FBs cause only mild mucosa injury. It has been reported that 80%-90% of FBs that reach gastrointestinal (GI) tract will pass through it without difficulty, 10%-20% require nonoperative intervention, and less than 1% need surgery [4].

Complications such as perforation, bowel obstruction, fistula, bleeding, abscess formation, and peritonitis may occur, depending on the type and size of the object. Even if they are uncommon, the associated morbidity may be severe and life-threatening.

Insertion of FB is no longer a medical oddity; it is encountered frequently and is associated with a significant morbidity and

mortality.

To prevent complications, early diagnosis based on a correct radiological documentation and interpretation of inhalation, ingestion, and insertion of FBs is mandatory.

Plain radiographs still play an important role in the assessment of ingested FBs in the pediatric patient: plain films of the neck, chest, and abdomen are very useful in confirming the diagnosis of FB ingestion because most ingested FBs are radiopaque [5].

History

4 years old girl presented to AFIRI with the history of ingestion of hairpin. Her systemic review was normal at the time of presentation

Investigations BCP: WNL LFT's:WNL RFT's: WNL CRP: WNL

Imaging

An erect abdomen X-ray was advised to see and localize the foreign object. Foreign body was identified in the hypochondrial region as shown in **figure 1**.

Discussion

The presenting symptoms of foreign body aspiration may vary depending on its location, size, and chronicity. The child may be comfortable and in no apparent distress or may present in extremis with impending airway failure. Coughing, wheezing, shortness of breath, fever, and recurrent pneumonia may each be the presenting symptom. Parental recall of a choking or gagging event followed by a cough is highly suspicious for a foreign body aspiration. However, this initial event may be short lived and the child may be asymptomatic for one or more



Figure 1

weeks, often leading the parents to forget about the inciting episode. In the absence of a choking or aspiration event, the diagnosis may be delayed for weeks to months [6].

Types of FB causing injuries depend on the symptoms related to FB ingestion/inhalation/insertion (providing an early diagnosis of FB injuries) and complications related to the FB characteristics (type, shape, dimensions). The main concern about FB injuries is the fact that they may be asymptomatic or that symptoms may be non-specific. Consequently, the FB injury can be misinterpreted as a gastrointestinal or respiratory infection. The absence of specific symptoms indicating the occurrence of FB injury can lead to delays in diagnosis, thereby increasing the risk of complications. Symptoms seem to mostly depend on the anatomical location. Many ingested FBs pass naturally through the gastrointestinal tract without complications or damage. However, severe complications can occur depending on the characteristics of the FB, its anatomical location, the child's age and delays in diagnosis [7].

Conclusion

Ingestion of foreign bodies is a common pediatric problem, with more than 100,000 cases occurring each year. The vast majority of pediatric ingestions are accidental; increasing incidence of intentional ingestions starts in the adolescent age group. In adolescents and adults, meat or food impactions are the most common accidental foreign body ingestion. Esopha-

geal pathology underlies most cases of food impaction. Management of foreign body ingestions varies based on the object ingested, its location, and the patient's age and size. Esophageal foreign bodies as a group require early intervention because of their potential to cause respiratory symptoms and complications, esophageal erosions, or even an aorto-esophageal fistula. Ingested batteries that lodge in the esophagus require urgent endoscopic removal even in the asymptomatic patient due to the high risk of complications. Sharp foreign bodies increase the foreign body complication rate from less than 1% to 15% to 35%, except for straight pins, which usually follow a relatively benign course unless multiple pins are ingested [8]. Magnets are increasingly ingested, due to their ubiquitous nature and the perception that they do not pose a risk. Ingestion of multiple magnets creates a significant risk of obstruction, perforation, and fistula development. Methods to deal with foreign bodies include the suture technique, the double snare technique, and the combined forceps/ snare technique for long, large, and sharp foreign bodies, along with newer equipment, such as retrieval nets and a variety of specialized forceps [9]. However, x-ray has been the first and the significant imaging modality in localizing the foreign body.

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