

UNUSUAL FOREIGN BODIES ASPIRATION IN INFANTS BELOW ONE YEAR OF AGE

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Abstract

Foreign body aspiration in children is common and responsible for a significant amount of mortality and morbidity. It usually presents with an initial episode of choking with subsequent respiratory symptoms. Children between the age of 1 and 3 have been found to be the major victims. Here we are presenting unusual cases of FBA below the age of 1 year.

Keywords: Foreign body, choking, aspiration, respiratory distress.

Introduction

Foreign body aspiration (FBA) is an extremely serious and life threatening condition in children. Sudden aspiration of foreign body into airway usually presents with respiratory symptoms such as cough and wheezing after a choking episode, it may result in acute respiratory distress, chronic pulmonary infection, atelectasis and death. It is most common in children between 1 and 3 years.

We will present 5 unusual cases of FB in the respiratory tract and 1 case of esophageal FB, all of them occurred in children below 1 year of age.

Case 1

A 3 month male presented to the ER of another hospital for acute onset of severe dyspnea and respiratory distress after his elder brother had pushed a FB into his throat. The patient was intubated after checking the oral cavity for any object and transferred to our hospital for further management.

Examination showed a cyanotic baby with oxygen saturation of 80 % and distended abdomen. An urgent chest X-ray revealed a 4 cm screw in the trachea, while the tube was fortunately inserted wrongly into the esophagus (Figure 1a).

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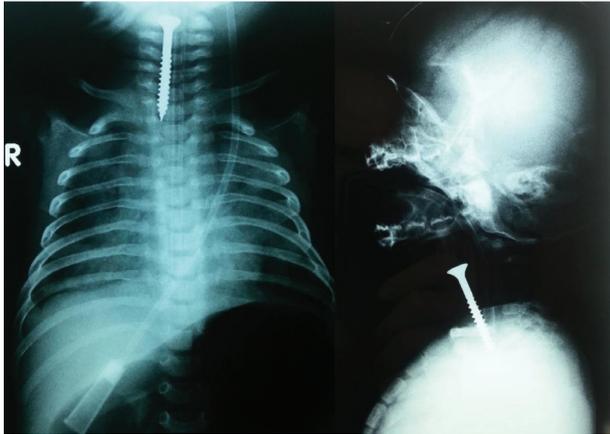
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Fig. 1a

AP and profile xray showed the screw in the trachea while the tube was posterior to the screw in the oesophagus



Immediately the tube was removed and oxygen was administered by face mask with gentle positive pressure. The patient was rushed to the operating room where a rigid bronchoscopy was done under general anesthesia using sevoflurane; a metallic screw was found lying in the subglottic area (Figure 1b). After removal of the screw immediate improvement in air entry was noticed and postoperative chest xray and gastrografin swallow were normal.

Fig. 1b

A 4 cm metallic screw



Case 2

A 9-month-old boy presented to the pediatric department with history of cough and wheezing for 3 day duration. On examination, the child had right sided wheezing on auscultation and had bouts of coughing. Chest X-ray showed a curved opaque foreign body in the right main bronchus (Figure 2a). The patient was referred to the ENT department. A rigid bronchoscopy

was performed under general anesthesia using sevofluane and manual ventilation through the side port of the bronchoscope; a metallic 3.5 cm pin was found stuck in the right main bronchus (Figure 2b). It was removed without any complication; the patient recovered well.

Fig. 2a

a right main bronchus opaque FB

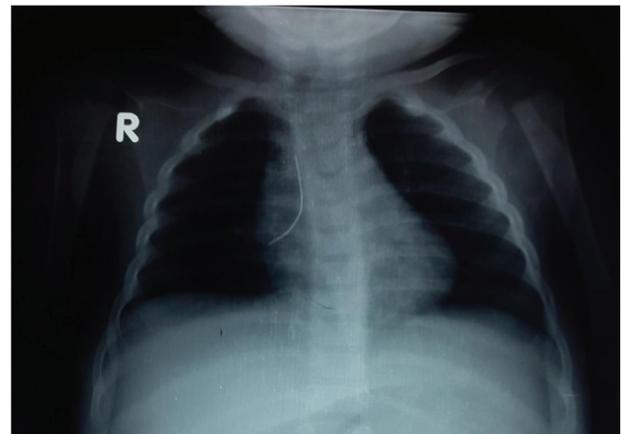
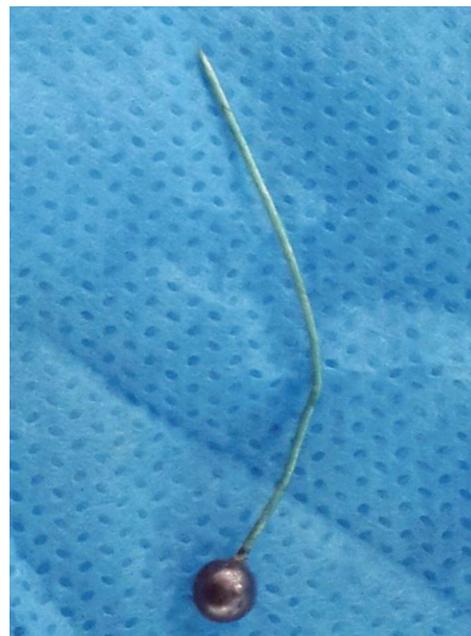


Fig. 2b

a 3.5 cm metallic pin



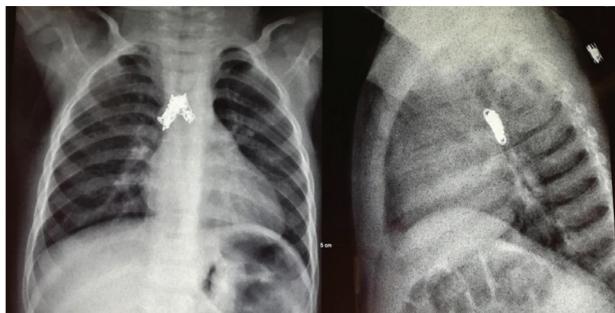
Case 3

A 9-month boy was brought to the emergency department with history of sudden onset of severe dyspnea, tachypnea and cough after swallowing an unknown object while playing with his elder sister. He had severe respiratory distress with intercostal

space indrawing, and flaring of the nasal ala. The pulse oximeter showed a saturation of 80 %, and intermittent gasping attacks were noticed. Auscultation revealed reduced air entry in both lungs. An urgent chest X-ray showed an irregular radio-opaque FB occupying the distal trachea, the carina and both main bronchi (Figure 3a).

Fig. 3a

an irregular radio-opaque FB occupying the distal trachea, the carina and both main bronchi



An urgent rigid bronchoscopy was performed under general anesthesia using sevoflurane and manual ventilation; a metallic chain was found obstructing the distal trachea. Using the crocodile serrated optical forceps the chain was grasped and removed but got stuck into the vocal cords. There was fall in the oxygen saturation (SpO₂ 30 %), a forceful pull was attempted and led to the breakage of the chain. The main part of the chain was pushed back into the trachea again to facilitate ventilation. Another trial to remove the chain was attempted successfully without any complications; it was a 20 cm copper chain (Figure 3b). Postoperative chest X-ray was normal and the patient made an uneventful recovery.

Fig. 3b

a 20 cm copper chain broken into 2 parts



Case 4

A 7 month male presented to the ER with the complaint of breathing difficulty, poor feeding and drooling of saliva of 1 day duration. On physical exam he had normal oropharyngeal examination; he had mild inspiratory stridor on auscultation. The pulse oximeter showed a saturation of 90%. Neck and chest Xray showed a radio-opaque FB in a shape of a star at the laryngeal level (Figure 4a). An emergency laryngoscopy was done under general anesthesia using sevoflurane; a metallic FB was found stuck at the level of cricopharyngeal muscle and its tip obstructing the laryngeal inlet. It was removed and found to be a 4 cm metallic zipper slider (Figure 4b). The post-operative period was uneventful. The Patient was discharged home after 24 hours.

Fig. 4a

a radio-opaque FB in a shape of a star at the laryngeal level



Fig. 4b

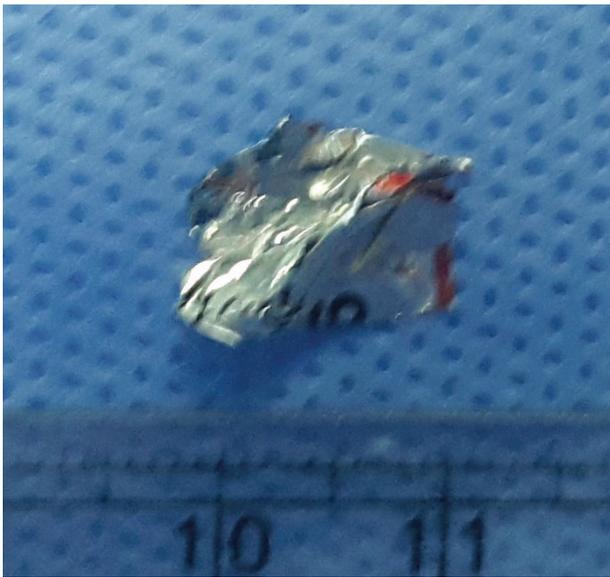
a 4 cm metallic zipper slider

Case 5

A 10-month-old boy presented to the ER for severe dyspnea and cough. Detailed history revealed that the patient had mild cough and flue like symptoms for the last 3 days, but he developed sudden exacerbation of his cough and dyspnea. On examination, the child had severe wheezing with inspiratory stridor. The pulse oximeter showed

a saturation of 92%. There was no history of choking from the parents. X-ray of chest and neck appeared normal. The infant was managed on the lines of bronchitis with inhaled bronchodilator and corticosteroid that provided some symptomatic relief after 2 days but the patient still had intermittent attack of stridor and episodes of severe dyspnea. A repeated chest X-ray was not relevant. The patient was planned for bronchoscopy under general anesthesia. After giving sevoflurane, a 3.5 rigid bronchoscope was introduced into the airway, a metallic colored FB was seen 1 cm below the subglottis, with the help of optical forceps the FB was removed. It was a 1 cm piece of aluminum foil paper (Figure 5). The patient improved following the removal of the FB.

Fig. 5
a 1 cm piece of aluminum foil paper



Case 6

A 45-day old boy presented to the ER for excessive crying and drooling. Detailed history revealed that his elder brother had pushed a FB into his throat, his mother had put her finger into the baby's mouth to remove it, which caused bleeding and pushing of the FB further.

On physical exam the baby was irritable, crying, with normal lung auscultation and oxygen saturation of 99 %. Neck and chest X-ray showed the presence of a radio-opaque FB in shape of Eiffel tower in the mid esophagus (Figure 6a).

Fig. 6a

AP and profile xray showed a radio-opaque FB in shape of Eiffel tower in the oesophagus



Under general anesthesia, after endotracheal intubation with a number 3.5 tube esophagoscopy was done using a 3.5 rigid bronchoscope. The FB was reached and grasped, but it couldn't be retrieved because it was stuck into the esophagus due to the conical irregular shape of the FB. The decision was taken to push the FB into the stomach to be removed through an open approach due to the fact that there is no available operative gastroscopy for such a young baby (4 kg of weight). Through a laparotomy, a 5 cm metallic FB in the shape of Eiffel tower was retrieved from the stomach (Figure 6b). Postoperative chest X-ray showed mediastinal fluid with left lung collapse indicating esophageal tear that was managed conservatively by inserting a chest tube and total parenteral feeding for 10 days.

Fig. 6b
a 5 cm metallic Eiffel tower



Discussion

Gustav Killian reported the first case of FB removal from the trachea in 1897. Despite the improvement in anesthetic and endoscopic technique, FB aspiration in children is still considered as the 5th leading cause of death in USA^{1,2}.

Children between the ages of 12 and 72 months seem to be the most vulnerable for FB aspiration. There are several reasons:

- they lack posterior dentition necessary for proper chewing
- they are usually playing and running at the time of ingestion
- they have immature swallowing coordination
- they have tendency to explore the environment by putting the objects in the mouth².

In children less than 6 months of age as in case 1 and 6, it is the culprit of the elder child who put the FB into younger child's mouth without knowing the consequences. Most of the cases occur in low socio-economic background and ignorant parents. Parents usually have a tendency to put finger into child's mouth to remove the FB, which causes trauma, bleeding and might push the FB further into the airways or the esophagus as in case 6. This practice should therefore be discouraged.

Most inhaled foreign bodies in children are food items, with peanuts being the most common; piece of toys are also common but sharp items are less common because of their sharp geometry which is hard to be kept in mouth and subsequently aspirated^{3,4}.

The foreign bodies found in our cases are extremely unique and have not been reported in the literature in such a young age.

Sudden onset of cough, dyspnea and wheezing are the major symptoms of FB in the airway. Unresolved or recurrent Pneumonia should raise the suspicion of FB aspiration⁵. The most important feature of aspirated FB in children is the sudden onset of choking and intractable cough; other presenting symptoms that occur are fever, breathlessness, wheezing and

paroxysmal coughs. FB aspiration can lead to near complete airway obstruction, asphyxia and death especially if the foreign body lodges in the trachea as in case 1 and 3. However many times the symptoms may not be seen during the initial period of aspiration and the patient may present later with complications^{4,5}.

The diagnosis may be obscured and delayed if the event is unwitnessed in a young child especially in the presence of associated conditions like asthma and respiratory tract infection, as seen in case 5. Children witnessed to choke while having small particles in their mouths and noted subsequently to have raspy respiration, wheezing, or coughing should undergo bronchoscopy even with normal radiographic findings^{6,7}. Rigid bronchoscopy is the gold standard for diagnosis and treatment of inhaled FB in children.

It should be performed by an expert surgical team because complications like pneumothorax, tracheal or esophageal injury can occur even in experienced hands.

Conclusion

Aspiration of a FB is a potentially lethal event especially if it is sharp and pointed. A careful history, meticulous examination and imaging are essential for early diagnosis. Public education is needed for the prevention of such a morbid problem.

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