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Foreign Body Aspiration – How Safe are Whistles in Toys?

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ABSTRACT

Foreign body aspiration (FBA) is a potentially life-threatening event, particularly in children as it can block respiration by obstructing the airway. Clinical presentation of unwitnessed FBA may be subtle and diagnosis requires careful clinical assessment and judicious use of radiography followed by bronchoscopy. Foreign bodies like plastic whistles are radiolucent and cannot be picked up on plain radiograph. Delayed diagnosis leads to serious complications. Hence awareness and high index of suspicion followed by meticulous bronchoscopy by competent surgeon are life saving in paediatric patients. We present a series of 9 patients with FBA (plastic whistles) managed in our hospital.

Key Words: Bronchoscopy, Foreign body aspiration, plastic whistles.

INTRODUCTION

Foreign body aspiration is common in children and is one of the common causes of accidental death below 3yrs of age[1,2]. At this age, most children are able to stand, are apt to explore their world via the oral route, and have the fine motor skills to put a small object into their mouths, but they do not have molars to chew food adequately.

Foreign body aspiration poses a major problem in developing countries as diagnosis is often delayed because classic symptoms such as choking, dyspnoea and cough are not seen in all cases and further if the cases are unnoticed they may present mimicking other conditions such as bronchitis, asthma and pneumonitis [2,4]. Plastic objects like whistles are radiolucent and are often missed on X ray. This can lead to serious pulmonary complications and death. These whistles have a loose component like transparent plastic film, which can be left behind during foreign body removal.

CASE SERIES REPORT

This is a retrospective study of cases of plastic whistle aspiration in children aged 3-15yrs of age managed in our hospital over a period of 8yrs from November 2006 to June 2013. Among 110 patients with foreign body aspiration, nine patients had aspirated plastic whistles. Six patients presented with history of aspiration immediately after the event and three patients presented at a later stage with right lower lobe pneumonitis.

Among the 6 children who reported immediately after the aspiration 2 patients presented with whistling sound whenever they exhaled and 4 children were asymptomatic except for a bout of violent cough soon after the aspiration. All the six patients had normal chest X ray. The remaining 3 children were referred at later stage for chronic cough with expectoration not responding to medication. These children had tachypnoea, tachycardia and coarse crepitations over the right lung on auscultation. These children had right lower lobe pneumonitis on X ray as shown in the fig 1.

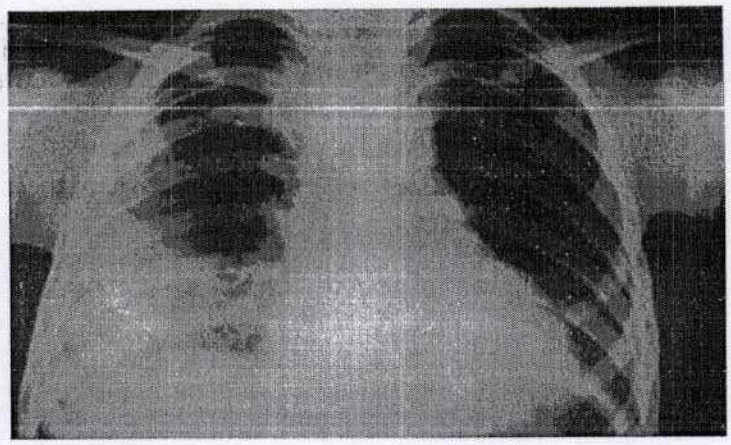

Fig -1: X-ray chest right lower lobe pneumonitis with cardiac border cut off sign

Rigid bronchoscopy was done using ventilating bronchoscope equipped with a 0 degree telescope mounted on foreign body removal forceps. Six patients who presented immediately after the aspiration underwent emergency bronchoscopy whereas three pateints who presented with pneumonitis underwent elective bronchoscopy.

All the 9 patients had foreign body (plastic whistle) lodged in right main bronchus along the lumen. All of them had successful removal of the whistle. The whistle was removed in toto in 7 patients as shown in fig 2 ,whereas in 2 patients removal was piecemeal as the loose plastic components got separated during removal. Post operatively all patients had an uneventful recovery.

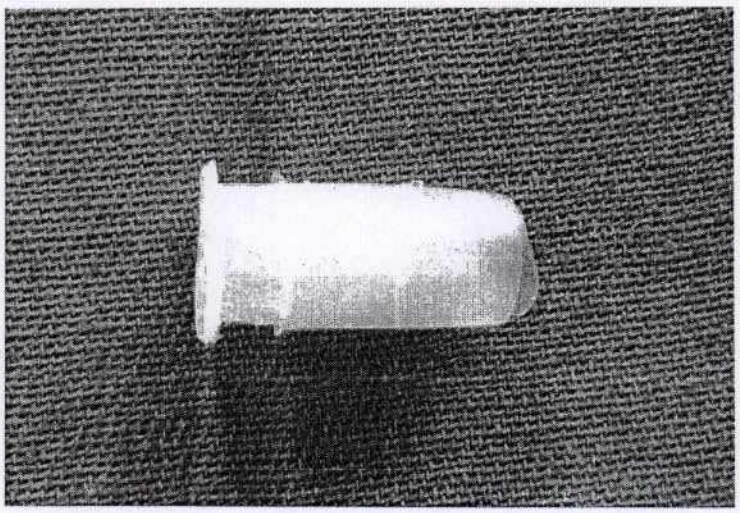

Fig -2: Plastic whistle removed

DISCUSSION

Approximately 80 percent of pediatric FBA episodes occur in children younger than three years, with the peak incidence between one and two years of age. Nearly all-case series report a male predominance, with a sex ratio ranging from 1.5:1 to 2.4:1 [5, 6]. Young children are particularly vulnerable to complications and death because of the smaller diameter of their airway, which is prone to obstruction.[7]

In majority of cases organic substances like seeds are commonly inhaled. Non-organic substances like plastic body aspiration occur more in developed countries (around 10%), but are less frequent in developing countries.[1] Aspiration of the plastic whistle toys is more common in older children as compared to younger children where vegetative materials are commonly inhaled. This is because after 3yrs of age children would have learnt blowing and inhaling. These plastic whistles also have loose component like a thin transparent film that can be accidently left behind while trying to remove them during bronchoscopy.

Diagnosing foreign body aspiration in children is difficult, as not all of them present with classic symptoms like choking, respiratory distress and sudden onset cough. In one 10-year review of 135 cases of airway FB in children, the classic triad of wheeze, cough, and diminished breath sounds was present in only 57% [8]. Furthermore these objects might get aspirated accidently when parental attention is not there and may go unnoticed. Such cases can still remain asymptomatic or may have whistling sound on expiration[9]. Awareness and high index of suspicion on a part of the treating physician will help diagnose these foreign bodies, especially when the classic whistling sign is present.

For diagnosing FBA a thorough history, careful clinical examination and chest X-ray are the main diagnostic tools. But the sensitivity and specificity of X ray in detecting FBA are as low as 66% and 51% [12]. Hence chest X rays cannot rule out plastic foreign body aspiration. Bronchoscopy remains the gold standard diagnostic and therapeutic tool in plastic foreign body aspiration.

In one of the retrospective studies in literature, plastic toys like whistle aspiration was about 2.34% (24/1015cases) of all foreign body bronchus. It was seen that plastic toys were more commonly inhaled in younger children aged less than 1yr (2.95%) when compared to older age group in children more than 6yrs(<0.39%)[1]. Other studies have shown that around 8% to 20 % of foreign body aspirations were plastic whistle commonly under the age of 10yrs with majority of them seen in right main bronchus and more commonly in males[3, 9,11]. Most of the cases had cough as a presenting complaint. These studies show consistent results with our series.

Only one study done in Rawalpindi showed that plastic whistles were the single most common type foreign body accounting for about 46.15%. This study showed that majority of foreign bodies was seen in left main bronchus, common under the age group of 10yrs [10].

Most of the mega series of FBA in literature have not reported aspiration of plastic whistles showing that it is rare[11]. Recently launched new plastic toys such as Lego have further increased the chances of aspiration. In more than 2/3rd of cases children remain asymptomatic, as they will be able to breathe through the gap in tubular whistles [12, 13].

An experienced surgeon and good anaesthetist are mandatory for successful rigid bronchoscopy. Use of a ventilating bronchoscope with a 0 degree telescope mounted on foreign body removal forceps is invaluable in removing these plastic objects completely.

Prevention of pediatric FBA is possible through legislation, caregiver education, and continued product safety vigilance. In U.S. "Small parts" are objects that fit into the Small Parts Test Fixture (SPTF), a cylinder with a diameter of 3.17 cm and a depth between 2.54 and 5.71 cm, any toy having parts which fails the SPTF test is banned [14]. Such regulations are required in India also. Awareness should be created among parents regarding the symptoms and risk related to foreign body aspiration involved with these toys.

CONCLUSION

Rare inhaled foreign bodies like plastic whistles require high index of suspicion for accurate diagnosis on the part of treating clinician. These foreign bodies can go unnoticed on chest X-rays. They remain asymptomatic or present with acute or long-standing respiratory features often not responding to medications. A timely rigid bronchoscopy done by competent team can prevent complications, which can save precious lives in paediatric age group.

In developing countries like India, children commonly play with plastic or rubber compressible toys, which have whistles in them as shown in fig 3. Toys with plastic whistles are best not given to small children and people must be made aware of potential risk associated with these toys.

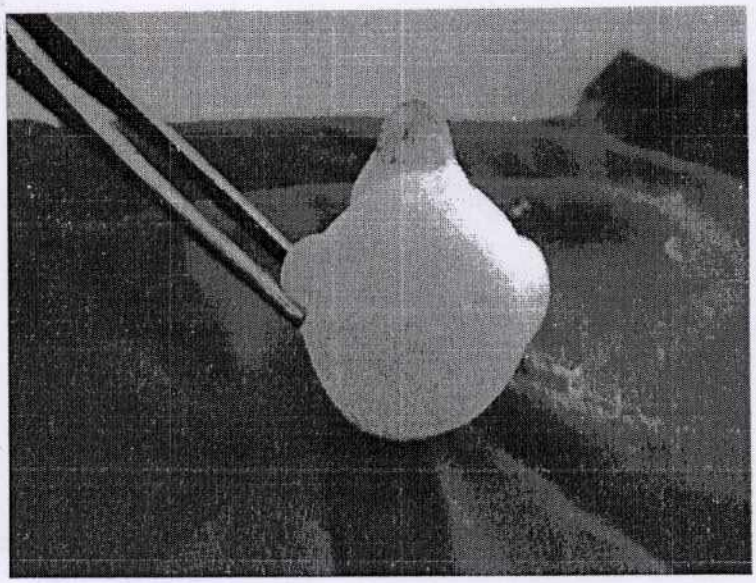

Fig- 3: Plastic compressible toys

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