

Case Report

Late presenting foreign body and spontaneous exhalation in children: Myth vs reality

Rashi, Amit Kumar, Amit K. Sinha, Bindey Kumar

Department of Pediatric Surgery, All India Institute of Medical Sciences, Patna, Bihar, India

ABSTRACT

Foreign body (FB) inhalation is frequent in infant and children. Prompt treatment is needed to avoid further complications. We here report two cases of FB right bronchus with delayed presentation. The children had history of FB inhalation which was not properly evaluated initially by their primary physicians. The children were brought to us due persistence of cough, vomiting and difficulty in breathing. Following evaluation, chest x-ray revealed FB in the airway of each of the patients, In both, there was accidental dislodgement of the FB before the specific intervention.

Key words: Foreign body inhalation, Heimlich manoeuvre, tracheobronchial FB

Introduction

Foreign body (FB) inhalation is a very common emergency in the pediatric age group. The reasons are their nature to explore the environment, putting the objects into their mouth and nose, the poorly developed cough reflex and peculiar anatomic construction of oropharynx and laryngopharynx.^[1] Children usually present with shortness of breath, and if neglected, as history is most of the time elusive, lead to infection and sequelae.^[2] There are many emergency measures to tackle these FBs in the tracheobronchial tree, for example, Heimlich maneuver, keeping the child upside down, back thrust and even manual removal on the spot.(references please). Once

the FB enters and remained lodged over a period, it does not come out on its own. Hence some form of intervention such as bronchoscopy or open thoracotomy is needed. We came across cases who had spontaneous dislodgement of tracheobronchial FB on the 5th day. In the English literature, to date, we have not come across a case of spontaneous exhalation of a FB, which is presenting late, that is, more than 4 days. We are reporting two cases of the FBs who were presented after 4 days, and before definitive treatment, both were exhaled spontaneously.

Case Reports

Case 1

A 4-month-old female child presented in the outpatient department with complaints of cough, vomiting after feeds and excessive cry for last 4 days. These complaints were sudden in onset. An accompanying sibling told that she had taken a nail in her mouth. The anxious mother consulted

Address for correspondence: Dr. Amit K. Sinha,
Department of Paediatric Surgery,
AllIMS, Patna, Bihar, India.
E-mail: amitsandilya1981@gmail.com

Received: 04 August 2019 **Revised:** 13 October 2019
Accepted: 04 November 2019 **Published:** 10 February 2020

Access this article online

Quick Response Code:



Website:

www.archintsurg.org

DOI:

10.4103/ais.ais_23_19

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Rashi, Kumar A, Sinha AK, Kumar B. Late presenting foreign body and spontaneous exhalation in children: Myth vs reality. Arch Int Surg 2018;8:184-7.

a local practitioner for this and reported the incident. However, the child was given the symptomatic treatment by the local practitioner without investigating the event. By the next 48 h, child deteriorated. As she had repeated vomiting and prolonged cough episodes, the parent visited Pediatric emergency of a nearby government hospital. Chest X-ray was advised; it showed approximately two inches long radiopaque shadow at bronchial junction extending into the right bronchus [Figure 1]. The child was stabilized and referred to our center for further management. On admission and clinical evaluation, the child was afebrile and pulse, blood pressure and temperature are within normal limits with normal consciousness and activities. The chest examination findings were normal except slight decrease in air entry on right side. There was no history of hemoptysis and vitals were normal. We planned an emergency bronchoscopy. She had a vomiting tendency while a resident doctor was trying to put the intravenous line. The mother restrained the child by holding her below the chest to vomit off the bed. During this sudden tactful moment, she compressed the upper abdomen, and at the same time, the child had a vigorous cough episode leading to spontaneous dislodgment and exhalation of the nail. We did a check chest X-ray. It showed improvement in lung fields and no FB in the tracheobronchial tree.

Case 2

A 10-year-old male presented to our OPD with complaint of sudden onset cough. He was suspected of having inhaled a small whistle while playing 5 days back. The patient had an initial choking event but got relieved spontaneously after 10 min Figure 2. Parent consulted a physician. He was advised for a chest X-ray, which showed hyperinflation and hyperlucency of the right side of hemithorax. The physician suspected a FB in the right bronchus and referred the case to our center. The patient had choking sensation to start but due to passage of FB through right bronchus, it was relieved. Chest X-ray showed hyperinflation of right lung field. The child was not under respiratory distress at the time of presentation to our center. We admitted the patient and planned a rigid bronchoscopy. During cannulation, the patient cried with vigorous cough, which led to the sudden expulsion of the FB [Figure 3]. Respiratory symptoms got relieved soon after. We deferred bronchoscopy at that time and planned a check bronchoscopy on the next day to look for any remaining part of the FB on check bronchoscopy. Both the major bronchus and trachea were clear. We documented bronchoscopy finding as negative. We did a check chest X-ray. It showed improvement in lung fields. Patient discharged on the next day.

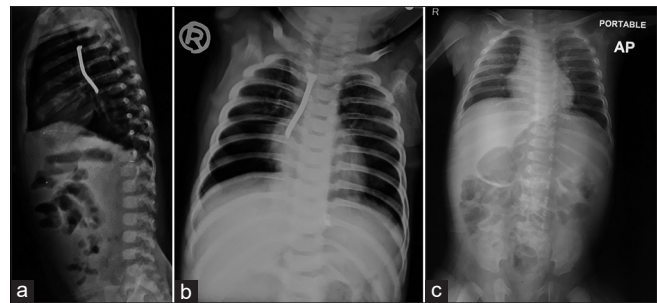


Figure 1: (a) X-ray chest AP View showing radiopaque foreign body in the right bronchus; (b) X-ray chest lateral view showing radiopaque foreign body; (c) X-ray chest AP view after spontaneous removal of foreign body



Figure 2: X-ray chest AP view showing hyperinflation of right lung field indicating right lung field



Figure 3: Plastic whistle measuring 20 mm length

Discussion

A child with a foreign body in the airway faces the potential risk for sudden airway obstruction and death.^[2] FB inhalation is a common serious problem often seen in children from 6 months to 6 years of age.^[3] The incidence in our case was on a very extreme side, that is, 4 months and 10 years. FB bronchus seems to be fatal than FB esophagus in children.^[3] The right bronchus is the most common location for a FB lodgment in the airway (58-65%) followed by the left bronchus (22-25%), the trachea (16.1%), and most rarely in the larynx (2.8%).^[3,4] In our case, FB was lodged in the right bronchus in both the cases. This is due to straighter and shorter right bronchus in the tracheobronchial tree. In our case, the first patient did not

present with difficulty in breathing/noisy breathing despite the apparent size of the FB in the airway. That may be due to partial obstruction of air passage due to its cylindrical shape.

Commonly cited inorganic materials include pieces of plastic, metal, beads, and pins.^[4] The presenting symptoms of patients with FBs in the airway can be quite variable, ranging from an intermittent cough to sudden death. The various authors found coughing, choking, or wheezing to be among the initial symptoms after FB aspiration in 75–95% of patients.^[3,5] In our cases, the only presenting symptoms were an initial cough followed by vomiting after each feed. Nausea and vomiting are not common accompaniment in FB bronchus. Earlier studies reported obstructive emphysema as the most common radiological sign.^[3,6] We also reported obstructive radiological sign in our case. In the first case, there was incomplete obstruction, but in the second case, it was complete.

The Heimlich maneuver (abdominal thrusts) is indicated in children, whereas alternating back blows and chest compressions are indicated in infants.^[5] The Heimlich maneuver proved to be useful in cases without any respiratory complication.^[7] A case report who aspirated a throat lozenge that had been in his mouth resulted in a complete airway obstruction resolved by back blows alone.^[8] The flow of fast-moving air column can exert pressure over the surface of a lodged FB leading to its expulsion. If the obstruction occurs at the end of the inspiratory cycle, the Heimlich maneuver and back blows are likely to be effective, but if the obstruction occurs during the initial stages of the inspiratory cycle, then these are unlikely to be effective.^[9]

As mentioned by Lima *et al.*,^[9] thin, triangular objects appear to cause only moderate respiratory distress because air exchange around these objects is almost regular in the initial stages. Although immediate coughing occurs in all of these patients, the cough is ineffective in expelling the object due to its relative lack of surface upon which the air pressure can exert force. However, in our case, the object was thin and cylindrical, despite that it got expelled on accidental Heimlich maneuver.

Earlier American Red Cross and the American Heart Association recommended back slaps, and chest thrusts with the infant positioned in a head-down position for choking.^[10] Heimlich and Patrick challenged these recommendations as being ineffective and dangerous.^[14] Abdominal thrusts (Heimlich maneuver) were recommended for children older than 1 year.^[10]

The reluctance for the Heimlich maneuver for emergency management of all age groups with acute airway obstruction is based on concern over causing visceral injury. Traumatic ruptures of the stomach, esophagus, jejunum, and mesentery have all been reported after application of the Heimlich maneuver in adult patients. There is genuine concern that more frequent injuries may occur in infants, who have less skeletal protection for their upper abdominal viscera. A significant liver rupture and intraperitoneal hemorrhages reported in two infant cases earlier.^[2]

Conclusion

Two cases described here had a long history of inhalation of FB. The spontaneous expulsion in the 1st case by maneuver mimicking Heimlich and in the 2nd case spontaneous, emphasize the importance of application of external maneuver to be tried even if patient is reporting late with emergency bronchoscopy set-up ready.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Fong E. Case based pediatrics for medical students and residents, chap. VIII Foreign Body Aspiration Author House Bloomington.
2. Johnson DG, Condon VR. Foreign bodies in the pediatric patient. *Curr Probl Surg* 1998;35:271-379.
3. Panda SS, Bajpai M, Singh A, Baidya DK, Jana M. Foreign body in the bronchus in children: 22 years' experience in a tertiary care paediatric centre. *Afr J Paediatr Surg* 2014;11:252-5.
4. Hootnick JL, Schroeder JW. Glass in the glottis: A pediatric case report. *Int J Pediatr Otorhinolaryngol Extra* 2015;10:4-7.
5. Black RE, Johnson DG, Matlak ME. Bronchoscopic removal of aspirated foreign bodies in children. *J Pediatr Surg* 1994;29:682-4.
6. Cohen SR, Herbert WI, Lewis GB Jr, Geller KA. Five-year retrospective study with special reference to management. *Ann Otol Rhinol Laryngol* 1980;89:437-42.

7. Boussuges S, Maitre Robert P, Bost M. Use of the heimlich maneuver on children in the rhone-alpes area. Arch Fr Pediatr 1985;42:733-6.
8. Bradley RN, Epstein JL, Christiansen PM. Case report of an acute foreign object airway obstruction resolved by back blows alone. Heart Lung J Acute Crit Care 2015;44:544.
9. Lima JA. Laryngeal foreign bodies in children: A persistent, life-threatening problem. Laryngoscope 1989;99:415-20.
10. Medicine C on PE. First aid for the choking child. Pediatrics 1993;92:477-9.
11. Heimlich HJ. First aid for choking children: Back blows and chest thrusts cause complications and death. Pediatrics 1982;70:120-5.