

Case Report

Wandering airway foreign body in early infancy

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Received: 16 June 2020

Accepted: 08 July 2020

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ABSTRACT

Accidental impaction of objects in the respiratory passage is a life-threatening condition. A 9-month-old male infant was admitted with fever, cough and respiratory distress without history of choking. He was treated as wheezy bronchitis with appropriate therapy, but did not show response. HRCT showed an impacted foreign body in the trachea which caused a partial luminal compromise. Two attempts to remove the foreign body by rigid bronchoscope failed, and tracheostomy was performed due to fall in oxygen saturation. After stabilization, again saturation was falling and air entry was absent on right hemithorax. Considering the possibility of movement of foreign body in right bronchus, bronchoscope was reintroduced and foreign body was removed in piecemeal. This process was complicated with cardiorespiratory arrest, twice from which the patient was revived. Postoperative period was uneventful. So, high index of suspicion is required to diagnose such a foreign body of the tracheobronchial tree to prevent morbidity and mortality.

Keywords: Airway foreign body, Bronchoscopy, Infant, Foreign body aspiration

INTRODUCTION

An accidental impaction of objects in the respiratory passage is not uncommon in children and it is one of the serious life-threatening clinical conditions that need immediate intervention. More than two-third cases of Airway Foreign bodies (AFBs) are reported in toddlers and account for 7% child mortality, while it is responsible for 40% accidental death in infancy.¹⁻³ The type of aspirated foreign bodies may vary depending on social, cultural factors and eating habits of the children.

Clinical presentation is dependent on the nature, size and location of the aspirated material and they could present as pediatric emergency due to airway obstruction and asphyxia or may stay asymptomatic.⁴ Here we present a nine months old male with wandering foreign body from subglottic region to the right main bronchus.

CASE REPORT

A 9 months old male infant of rural resident of a nearby state was admitted with fever of mild to moderate grade, intermittent which was associated with bouts of cough mainly in evening hours since eight days with fast breathing since last 4 days prior to hospitalization. There was no past history of hospitalization except that he was a NICU graduate as a case of very low birth weight with feeding problem. Despite, repeated inquiries parents denied history of any episode of choking, vomiting, sudden respiratory distress, cyanosis or loss of consciousness; suggestive of foreign body ingestion. On arrival, he had respiratory distress (tachypnea, subcostal/intercostal indrawing, nasal flaring) without cyanosis. Systemic examinations were within normal limit except bilateral wheeze and decreased air entry on bilateral basal regions. Peripheral smear revealed

leucocytosis and chest radiograph was within normal limits (Figure 1).



Figure 1: Normal chest radiograph.

Clinically, he was treated as wheezy bronchitis with antibiotics, asthalin nebulisation and oral steroid. Initially, he responded for 48 hours but again developed respiratory distress and chest findings worsened and hence was shifted to PICU. Despite appropriate care/drug therapy, his condition did not improve and so, High resolution computed tomography (HRCT) was performed. HRCT showed a well-defined intraluminal round to oval fat density structure of average 23HU measuring approximately 4.5mm×3.5mm×9.5mm noted at the level of C6 vertebral body in the trachea. It was impacted and causing partial luminal compromise. The wall of trachea was intact without any evidence of pneumothorax/pneumomediastinum or collapse-consolidation (Figure 2).



Figure 2: HRCT intraluminal round to oval fat density structure.

Under general anesthesia, patient was posted for bronchoscopy examination. An attempt was made to introduce a 3.5 Fr rigid bronchoscope through the vocal cords which could not be negotiated beyond cords. However, foreign body was visible which was stuck in the subglottic region but could not be removed even after two attempts. Tracheostomy was performed in view of oxygen desaturation. After stabilization, again saturation decreased down up-to 50% and air entry was absent on right hemithorax. Considering the possibility of movement of foreign body in right bronchus,

immediately bronchoscope was introduced and foreign body was removed in piecemeals which had completely occluded the right main bronchus (Figure 3, Figure 4).



Figure 3: Foreign body.



Figure 4: Fragment of peanut removed from right bronchus.

During this process, child went into cardiorespiratory arrest, twice and was revived. Afterwards patient was managed in pediatric intensive care unit with systemic steroids, bronchodilators, nebulisation and antibiotics. Postoperative period was uneventful and the patient was discharged after seven days.

DISCUSSION

Impaction of foreign bodies in the upper aero-digestive tract and airway obstruction is a medical emergency requiring urgent intervention to save the life. Foreign body aspiration (FBAs) can be seen at any age but 80% of reported cases are below 3 years, of which the peak frequency occurs in 1-2 years of age group.^{1,2,5} Infants and toddlers are more prone for aspiration of foreign bodies because of their tendency to explore their world via oral routes, the fact that they might not have developed posterior dentition and their immature neuromuscular mechanism for swallowing and airway protection. The reason for male predominance remains unclear, however, some attributed it to the more adventurous and impulsive behavior of boys and higher (1.26:1, 2.71:1) male to female ratio was reported by Dorterler et al and Chew et al respectively.

The properties of aspirated foreign bodies depend on social and cultural factors and the eating habits of the victim. In western literature, 91% of inhaled foreign bodies are organic material, peanuts accounts for half of the cases. Bones were predominant airway foreign bodies in Southeast Asia and China. Similarly seeds of watermelons, sunflowers and pumpkins are more prevalent in Egypt, Turkey and Greece, respectively.⁴ But rare type of foreign bodies like fish, balloon, and plastic piece of toys are reported in the Indian literature.⁶⁻⁸

Aspirated foreign bodies into tracheobronchial tree are usually localized in the right bronchial system because right main bronchus is shorter, wider and closer to the trachea than the left and the angles and size of main bronchial branching are similar to each other in children. But other sites like left bronchial system (23%), trachea and carina (13%), larynx (3%) and bilateral bronchial tree (2%) are also reported in one series.⁵ Our patient had impacted foreign body in subglottic region and it was moved into the right main bronchus during the procedure.

The clinical presentation depends on the nature, size and location of the aspirated material. It can present with sudden severe asphyxia or may be asymptomatic and a healthy child can suddenly develop cough, choking and difficulty in breathing with a localized wheeze which arises the suspicion of foreign body aspiration. Following symptomatic phase, there may be a symptom free period which may vary from days to months and later on they may present with recurrent episodes of wheezing, sudden onset asthma, recurrent pneumonitis, hemoptysis and bronchiectasis which are often misdiagnosed. Our case was also initially diagnosed as wheezy bronchitis and later on diagnosed as airway foreign body.

Diagnosis of AFB is a real dilemma. Negative chest radiograph does not exclude foreign bodies as only 16% radiopaque material can spot the diagnosis on X ray.⁹ Other radiological findings on inspiratory-expiratory film in anterior-posterior view include unilateral atelectasis, local hyperinflation or obstructive emphysema. Computed Tomography is superior to that of chest radiography to detect radiolucent foreign bodies. Flexible fibro-optic bronchoscopy is the gold standard for the diagnosis.⁵ Recently Heyer et al and Kadmon et al developed a scoring system to diagnose airway foreign body.^{10,11}

The management plan depends on general condition of the patient, clinical setting and policy guidelines of the health facility. Rigid bronchoscopy is the modality of choice in extracting AFB but the type of anesthesia is another issue of controversy. Nature of inhaled body is the only predictor of recovery and subsequent hospital stay as observed by Hidaka et al.¹² Arterial oxygen desaturation, bradycardia and bronchospasm are the minor complications while laryngeal edema, pneumothorax, slippage of foreign bodies and cardiac arrest are the major complications during the procedure. In our case also,

authors came across major life-threatening events. Mortality rate varies from 0.42% to 2% as reported in various series of cases.^{13,14}

CONCLUSION

Diagnosis of tracheobronchial foreign body can easily be missed in patients who may present as recurrent wheeze or chest infection as it was seen in our case. Therefore, high index of suspicion is required to diagnose such a foreign body to prevent morbidity and mortality. Prevention of inhalation of foreign body is the main treatment by careful supervision of children and raising of community awareness by family physician or through educational programme.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

REFERENCES

1. Dörterler ME, Kocaman OH, Günendi T, Boleken E. A single-center experience of pediatric foreign-body aspiration: a retrospective 4-year case series. *Lung India*. 2019;36(3):22-6.
2. Chew HS, Tan HKK. Airway foreign body in children. *Int J Clin Med*. 2012;3:655-60.
3. Skoulakis CE, Doxas PG, Ppatakis CE, Proimos E, Christodoulou P, Bizakis JG, et al. Bronchoscopy for foreign body removal in children. A review and analysis of 210 cases. *Int J Pediatr Otorhinolaryngol*. 2000;53:143-8.
4. Salih AM, Alfaki M, Alam-Elhuda DM. Airway foreign bodies: a critical review for a common pediatric emergency. *World J Emerg Med*. 2016;7(1):5-12.
5. Sultan TA, van As AB. Review of tracheobronchial foreign body aspiration in the South African paediatric age group. *J Thorac Dis*. 2016;8(12):3787-96.
6. Narayanan SK, Mohanan A. Infant with a foreign body bronchus: a fishy situation. *Ann Pediatr Surg*. 2017;13(2):93-4.
7. Dias E. An unusual case of foreign body aspiration in an infant. *Ann Med Health Sci Res*. 2012;2(2):209-10.
8. Roy K, Amin SK, Setu M, Khondaker T, Chowdhury NS. An unusual case of foreign body aspiration: a casereport. *AKMMC J*. 2015;6(2):47-9.
9. Cantaneo AJ, Reibschied SM, Ruiz Junior RL, Ferrari GF. Foreign body in tracheobronchial tree. *Clin Pediatr*. 1997;36(12):701-6.
10. Heyer CM, Bollmeier ME, Rossler L, Nuesslein TG, Stephan V, Bauer TT, et al. Evaluation of clinical, radiological, and laboratory prebronchoscopy finding in children with suspected foreign body aspiration. *J Pediatr Surg*. 2006;41(11):1882-8.

11. Kadmon G, Stern Y, Bron-Harlev E, Nahum E, Battat E, Schonfeld T. Computerized scoring system for the diagnosis of foreign body aspiration in children. *Ann Otol Rhinol Laryngol*. 2008;117(11):839-43.
12. Hidaka H, Obara T, Kuriyama S, Kurosawa S, Katori Y, Kobayashi T. Logistic regression analysis of risk factors for prolonged pulmonary recovery in children from aspirated foreign body. *Int J Pediatr Otorhinolaryngol*. 2013;77(10):1677-82.
13. Kaur K, Sonkhya N, Bapna AS. Foreign bodies in the tracheobronchial tree: a prospective study of fifty cases. *Indian J Otolaryngol Head Neck Surg*. 2002;54(1):30-4.
14. Fidkowski CW, Zheng H, Firth PG. The anesthetic consideration of tracheobronchial foreign bodies in children: a literature review of 12979 cases. *Anesth Analg*. 2010;111(4):1016-25.

Cite this article as: Meshram RM, Nagdeve N, Gajimwar VS, Nandikoppa PN, Gondase SP. Wandering airway foreign body in early infancy. *Int J Contemp Pediatr* 2020;7:1798-801.