

Original Research Article

Prospective evaluation of tracheobronchial foreign bodies

Ihsan A. T., Divya Ambooken*

Department of ENT, Jubilee Mission Medical College and Research Institute, Thrissur, Kerala, India

Received: 08 May 2020

Revised: 19 June 2020

Accepted: 02 July 2020

***Correspondence:**

Dr. Divya Ambooken,

E-mail: divyaanstin@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Foreign body aspiration is a condition that requires immediate and prompt management to avoid complications. Aim of this study was to find out proportion of tracheobronchial foreign bodies in under five age group, common sites of foreign body lodgement, types of tracheobronchial foreign bodies, and complications associated with this.

Methods: This study was conducted in Department of ENT at Jubilee Mission Medical College and RI, Thrissur, during the period of January 2018 to June 2019 and comprises 24 cases. Rigid bronchoscopy under general anesthesia was done to remove these foreign bodies.

Results: Eighteen cases were in under 5 age group. Peanut was the most common foreign body aspirated followed by badam and vegetable seeds. Common site of lodgement was in bronchi with 10 cases in right bronchi and 9 cases in left bronchi. Complication seen associated with this was pneumonia in this study.

Conclusions: Foreign body aspiration is common in young children and hence a positive history might be absent. Hence there is high chance of misdiagnosis and complications. Parent education is must and avoid giving ungrinded nuts to young children.

Keywords: Foreign body, Tracheo bronchial, Rigid bronchoscopy

INTRODUCTION

Tracheobronchial foreign body cases constitute a constant hazard in all age groups, especially in children. Foreign body aspiration is leading cause of accidental death in children.¹ It can result in a spectrum of presentations, from minimal symptoms to respiratory compromise and even death. Hence it is an emergency situation.² The symptom triad of choking, coughing and unilateral wheeze is present in most cases. A high index of suspicion and timely intervention can reduce morbidity as well as mortality.³

Rigid bronchoscopy under general anesthesia, as early as possible, is considered as the definite diagnostic and therapeutic intervention in all cases of suspicious

tracheobronchial foreign bodies. The golden dictum says “The clinician should be prepared to undertake bronchoscopy on the basis of history alone”.⁴

Aim of the study was to study the proportion of foreign body in under 5 age group, to find common sites of lodgement of foreign body and to study incidence of complications related to foreign body removal.

METHODS

This prospective study was conducted in department of ENT, Jubilee Mission Medical College and Research Institute, Thrissur. Twenty-four patients with suspicious foreign body tracheobronchial tree who came to ENT OPD or casualty at Jubilee Mission Medical College and Research Institute, Thrissur and underwent endoscopy for

confirmation of diagnosis and its treatment during the period of January 2018 to June 2019 were included in the study. The permission to proceed with this research work was given from Institutional Ethics Committee on 29/11/2020. After taking an informed written consent from those willing to enroll in the study, data were systematically recorded. A detailed proforma was filled for each patient with regard to age, history, examination, radiological evidence, procedures underwent, site from where foreign body was removed, other endoscopic findings, outcome and complications associated. Radiological investigations like X-ray, CT or virtual bronchoscopy done in relevant cases. Rigid bronchoscopy was done to remove foreign bodies from trachea and bronchi. All patients post procedure were observed in the hospital for a minimum of 6 hours after the procedure was over. These patients were followed up for a minimum period of 1 month. All the collected data were analysed. To obtain the distribution of study variables, frequency and percentages were applied. Data was entered in an excel file and analysed by using IBM SPSS version 25.

RESULTS

In our study majority of tracheobronchial foreign bodies were in young children of 0-5 years which constituted 75% cases (18 cases out of 24 tracheobronchial foreign body cases). There were no cases of tracheobronchial foreign bodies in above 20 years age groups in the present study.

Table 1: Age distribution in tracheobronchial foreign bodies.

Age group (in years)	Number	Percentage
0-5	18	75
6-12	4	16.6
13 -19	2	8.3
20-39	0	0
40-60	0	0
>60	0	0

Peanut was the leading tracheobronchial foreign body. It constituted 37.5% of tracheobronchial foreign bodies. Nuts (9 cases of peanuts, 4 cases of badams) constituted 13 cases (54.2%)

Table 2: Types of tracheobronchial foreign bodies.

Object	Number	Percentage
Peanut	9	37.5
Badam	4	16.7
Vegetable seed	4	16.7
Pin	2	8.3
LED bulb	1	4.2
Lozenges	1	4.2
Pulse	1	4.2
Plastic piece	1	4.2
Whistle	1	4.2

Foreign bodies were slightly more in right bronchi compared to left. 41.6% of tracheobronchial foreign bodies were in right bronchus and 37.5% in left bronchus.

Table 3: Location of tracheobronchial foreign bodies.

Site	Number	Percentage
Right bronchi	10	41.6
Left bronchi	9	37.5
Bilateral bronchi	2	8.3
Trachea	3	12.5

There were 3 cases with complications. All the 3 had pneumonia as complication.

DISCUSSION

Foreign body tracheobronchial tree is an emergency condition which requires prompt management. In this study 75% population were in under 5 age group. In the prospective study conducted by Mukherjee et al on foreign body aspiration from September 2006 to October 2008 at IPGMER and SSKM hospital, Kolkata, among 94 patients 70.2% i.e. 66 were within 5 years of age and most were within 2-3 years of age.³ Darrow et al reviewed multiple case series and found that children younger than 5 years of age account for approximately 84% of cases.⁵ Both these studies are comparable to the present study. At this age, as children get acclimatised to solid food, there is uncoordinated swallowing reflexes and absent molar leading to improper chewing and in addition children has a habit of putting all objects in mouth to determine their taste and texture, along with the habit of crying, speaking and shouting while eating which makes them more prone to accidental aspiration.⁶

Whole nuts are the most common tracheobronchial foreign body. There were 13 cases in this study with nuts as tracheobronchial foreign body. Hence ungrinded nuts should be avoided in young children. In the study by Mukherjee et al, vegetables were the most common FBs as they were found in 26 cases among the total 94 patients which was in contrast with my study.² A retrospective study by Selvam et al between December 2016- May 2017, at Institute of Child Health and Hospital for Children, Madras Medical College.⁷ The study included 31 cases of foreign body aspiration. The most common foreign body was peanut in the airway.

In the tracheobronchial tree most common site was in bronchi (19 cases) which constitutes 79.1% of tracheobronchial foreign body cases. In the study by Gupta at S.S. Medical College and G.M. Hospital, Rewa, Madhya Pradesh from January 2008 to August 2012, of the total 16 cases with foreign body aspiration, there were 12 cases with foreign body lodgement in bronchi and remaining 4 cases in trachea.³ Hence this study was similar to the present study.

Vegetable foreign bodies, as they are hygroscopic, swell up within a few days causing blockage of the lumen of the bronchus and retention of secretions distal to it. Secondary infection occurs easily leading to lobar pneumonia.² In the present study there were 3 cases with pneumonia as a complication secondary to foreign body.

Although radiographs may not confirm or rule out the presence of a foreign body, the advantages of finding one on a radiograph far outweigh the disadvantage of missing one. In patient suspected of having aspirated foreign body, plain 2-dimension radiograph of the chest must be taken for preoperative diagnosis and evaluation.³ The affected lung may show hyperaeration and mediastinum shift because of the ball valve effect of the bronchial foreign body. Emphysema is the most common radiological finding in pediatric age group and atelectasis and collapse is common in adults.⁸

Complications during removal of airway foreign bodies via bronchoscopy from the tracheobronchial tree may be encountered even by experienced hands. The most commonly reported complications include failure in removing the foreign body, laryngeal edema, pneumothorax, pneumomediastinum, subcutaneous emphysema, tracheotomy or assisted ventilation necessity for respiratory distress, hypoxic brain events, cardiopulmonary arrest and even death.⁹

CONCLUSION

Foreign bodies in tracheobronchial tree constitute a constant hazard in all age groups, especially in children, which demands immediate action and management. Careful assessment, clinical evaluation, radiological investigations and effective management with prompt removal of foreign body remains basis for favourable outcome. Prevalence of foreign body was very much high (75%) in under 5 age group in our study. Most common site of foreign body lodgement in tracheobronchial tree in our study was bronchus with frequency in right bronchus slightly more compared to left. Peanut was the leading tracheobronchial foreign body. Rigid bronchoscopy was done for foreign body removal.

Ungrinded nuts should not be given to young children. Children's behaviour, anatomical characteristics and physiological features such as immature swallowing coordination, development of chewing capacity and higher respiratory rates lead to increased chances of

aspiration. Guardians should be aware of this fact. Prevention and public education for this serious problem will be necessary.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sharma HS, Sharma S. Management of laryngeal foreign bodies in children. *J Accid Emerg Med.* 1999;16(2):150-3.
2. Mukherjee M, Paul R. Foreign body aspiration; demographic trends and foreign bodies posing a risk. *Indian J Otolaryngol Head Neck Surg.* 2011;63(4):313-6.
3. Gupta R, Poorey VK. Incidence of foreign bodies in aerodigestive tract in vindhya region: our experience. *Indian J Otolaryngol Head Neck Surg.* 2014;66(2):135-41.
4. Stradling P. *Diagnostic bronchoscopy* 6th edition. Churchill Livingstone Edinburgh; 1991; 3.
5. Darrow HD, Holinger LD Foreign bodies of the larynx, trachea and bronchi. *Blustine cd pediatric otolaryngology*, 3rd edition. 1995: 404-412.
6. Sinha V, Gurnani D, Barot DA. A study of applications of rigid bronchoscopy in pediatric patients. *Indian J Otolaryngol Head Neck Surg.* 2014;66(2):142-4.
7. Selvam DK. A clinical study on paediatric aero digestive foreign body in emergency department. *Int J Otorhinolaryngol Head Neck Surg.* 2018;4(3):682-5.
8. Wiseman NE. The diagnosis of foreign body aspiration in childhood. *J Pediatr Surg.* 1984;19:531-5.
9. Jaswal A, Jana U, Maiti PK. Tracheobronchial foreign bodies:A retrospective study and review of literature. *Indian J Otolaryngol Head Neck Surg.* 2014;66(1):156-60.

Cite this article as: Ihsan AT, Ambooken D. Prospective evaluation of tracheobronchial foreign bodies. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:1474-6.