

Original article:

Evaluation of Prevalence of Tracheo- Bronchial Foreign Bodies Cases at a Tertiary Care Centre

Shailendra Subhash Inamdar

Assistant Professor, Department of ENT, Shri Bhausaheb Hire Government Medical College and Hospital, Dhule, Maharashtra, India.

Corresponding Author: Dr. Shailendra Subhash Inamdar, Assistant Professor, Department of ENT, Shri Bhausaheb Hire Government Medical College and Hospital, Dhule, Maharashtra, India.

Date of Submission: 09 August 2011, Date of Acceptance: 17 September 2011

ABSTRACT

Background: Tracheobronchial foreign body (TFB) aspiration is rare in adults, although incidence rates increase with advancing age. Risk factors for TFB aspiration in adults are a depressed mental status or impairment in the swallowing reflex. Hence, the present study was conducted for assessing the prevalence of Tracheo- bronchial foreign bodies cases.

Materials & Methods: A total of 983 patients were examined. Out of them, tracheo-bronchial foreign was seen in 100 patients. These 100 patients who underwent rigid bronchoscopy for suspected tracheo-bronchial foreign body were enrolled. Complete demographic and clinical details of all the patients were obtained. Patient characteristics, history, clinical, radiographic and bronchoscopic findings were noted. A Performa was made, and type of foreign body was assessed in all the patients. All the results were recorded on a Microsoft excel sheet and subjected to statistical analysis using SPSS software.

Results: Prevalence of foreign body aspiration was 10.73 percent. The mean age of the patients was 11.8 years. Cyanosis with stridor, Stridor with respiratory distress, Cough/ wheezing and Non-specific symptoms were seen in 5 percent, 10 percent, 59 percent and 26 percent of the patients respectively. Vegetable seeds, Whistles, Pen cap, Food materials, Ground nut, Rubber piece, Plastic whistle and Mango piece were seen in 23%, 11%, 10%, 8%, 28%, 10%, 5% and 5% respectively.

Conclusion: Even in the absence of any visible physical or radiological evidence, sensitive patient populations with a suggestive history should be highly suspected of having tracheobronchial foreign bodies.

Key words: Tracheobronchial, Foreign bodies.

INTRODUCTION

Tracheobronchial foreign body (TFB) aspiration is rare in adults, although incidence rates increase with advancing age. Risk factors for TFB aspiration in adults are a depressed mental status or impairment in the swallowing reflex. Symptoms associated with TFB aspiration may range from acute asphyxiation with or without complete airway obstruction, to cough, dyspnea, choking, or fever. In adults, many other medical conditions mimic breathing abnormalities similar to those associated with TFB aspiration. If history is not suggestive, then only a high index of suspicion can ensure proper diagnosis and timely removal of the foreign body. Initial treatment is airway support. Radiographic imaging may assist in localizing the foreign body. Bronchoscopic removal of the foreign body is necessary to avoid long-term sequelae. Flexible bronchoscopy is

effective both in the diagnosis and removal of foreign bodies.¹⁻³ Foreign body aspiration is one of the most important causes of accidental deaths in childhood. Most of the deaths occur before reaching hospital. Taking the foreign body out of the tracheobronchial system is mostly lifesaving. For children who reach the hospital, the most appropriate choice of methods for removal of the foreign body is bronchoscopy. However, during and after bronchoscopy life-threatening complications can be observed.⁴⁻⁶ Hence; the present study was conducted for assessing the prevalence of Tracheo- bronchial foreign bodies cases.

MATERIALS & METHODS

A total of 983 patients were examined. Out of them, tracheo-branchial foreign was seen in 100 patients. These 100 patients who underwent rigid bronchoscopy for suspected tracheo-bronchial foreign body were enrolled. Complete demographic and clinical details of all the patients were obtained. Patient characteristics, history, clinical, radiographic and bronchoscopic findings were noted.

Preoperative Chest X-ray was carried out as routine procedure, but CT scan was not done in all due to cost consideration. A Performa was made, and type of foreign body was assessed in all the patients. All the results were recorded on a Microsoft excel sheet and subjected to statistical analysis using SPSS software.

RESULTS

The prevalence of foreign body aspiration was 10.73 percent. The mean age of the patients was 11.8 years. Cyanosis with stridor, Stridor with respiratory distress, Cough/ wheezing and Non-specific symptoms were seen in 5 percent, 10 percent, 59 percent and 26 percent of the patients respectively. Vegetable seeds, Whistles, Pen cap, Food materials, Ground nut, Rubber piece, Plastic whistle and Mango piece were seen in 23%, 11%, 10%, 8%, 28%, 10%, 5% and 5% respectively.

Table 1: Age and gender-wise distribution

Variable	Number	Percentage
Mean age (years)	11.8 years	
Boys	66	66
Girls	34	34

Table 2: Clinical presentation

Clinical presentation	Number	Percentage
Cyanosis with stridor	5	5
Stridor with respiratory distress	10	10
Cough, wheezing	59	59
Non-specific symptoms	26	26

Table 3: Type of foreign body

Type of foreign body	Number	Percentage
Vegetable seeds	23	23%
Whistles	11	11%
Pen cap	10	10%
Food materials	8	8%
Ground nut	28	28%
Rubber piece	10	10%
Plastic whistle	5	5%
Mango piece	5	5%

DISCUSSION

Prevalence of foreign body aspiration was 10.73 percent. Mean age of the patients was 11.8 years. Cyanosis with stridor, Stridor with respiratory distress, Cough/ wheezing and Non-specific symptoms were seen in 5 percent, 10 percent, 59 percent and 26 percent of the patients respectively. Vegetable seeds, Whistles, Pen cap, Food materials, Ground nut, Rubber piece, Plastic whistle and Mango piece were seen in 23%, 11%, 10%, 8%, 28%, 10%, 5% and 5% respectively. McGuirt WF assessed 88 cases of foreign body aspiration. The patients ranged in age from 5 months to 73 years; the peak incidences of foreign body aspiration occurred in children less than 3 years of age and in adults older than 50 years. Sixty-one of the 88 patients were male. Physical examination was abnormal in 61% of patients. The most common radiographic abnormality was inspiratory-expiratory abnormality, seen in 27% of patients. Rigid endoscopy under general anesthesia was the preferred method for removal of the aspirated material. Multiple foreign bodies were found in 5% of the patients. Tracheobronchial foreign bodies should, therefore, be strongly suspected in susceptible patient populations who present with a suggestive history, even when no physical or radiographic evidence can be seen. Patients should be carefully examined for multiple foreign bodies at the time of rigid endoscopic removal.⁹

Hasdiraz, L et al reviewed complications and precautions that need to be taken against possible risks. Bronchoscopy was done in 1035 children in our department on suspicion of foreign body aspiration. The average age of these patients, mostly male (55%), was 4.1 years. Medical history, physical examination, radiological methods and bronchoscopy were used in the diagnosis. Bronchoscopy was applied under general anaesthesia, and the respiratory and cardiac systems were closely observed for 4 hours after the process. Nine hundred eleven of 1035 patients (88%) had a foreign body in the tracheobronchial system. In 42 of the patients, infection required aggressive medication; in 30, hypoxia and bradycardia occurred as a result of obstruction during bronchoscopy; in 37, laryngeal edema, laryngeal spasm and/or bronchospasm required ventilation support; in 6 patients, tracheobronchial system bleeding occurred; in 2 patients pneumothorax occurred, in 1 patient pneumomediastinum was observed and 6 patients needed thoracotomies because of foreign body aspiration. In this series there were 8 deaths. Bronchoscopy, performed for tracheobronchial foreign body aspiration, carries a potential life-threatening risk during and after the process.¹⁰ Çiftçi AO et al present the entire spectrum of pediatric bronchoscopy performed for foreign body aspiration (FBA), with emphasis on

accuracy of diagnostic tools, technical aspects, and predictors of complications. A total of 740 bronchoscopies were done in 663 children (402 boys, 261 girls) presenting a mean age of 3.1 +/- 0.1 years. FBA was confirmed in 563 (85%) patients, whereas normal bronchoscopic findings, signs of pulmonary infection, and endobronchial mass were noted in 43 (6%), 54 (8%), and 3 (0.4%) patients, respectively. There was significant difference between patients with and without FBA with regard to presence of definite history (91% v 54%), normal physical examination findings (14% v 46%), and normal radiologic findings (13% v 31%). However, none of these parameters or their associations were found to be reliable to predict the presence of FBA or clinical complications. The presence of history was the most sensitive (91%), accurate (84%), and specific (46 %) diagnostic tool. Bronchoscopic removal of foreign bodies was succeeded in 558 (99%) children. Worsening of respiratory tract infection (n = 13), cardiac arrest (n = 6), laryngeal edema (n = 5), pneumothorax (n = 5), pneumomediastinum (n = 2), tracheal laceration (n = 2), and bronchospasm (n = 2) were the life-threatening complications observed in 21 (4%) patients with FBA and 14 (14%) patients without FBA (P <.05). There were 5 (0.8%) deaths. Of these, 2 patients presented with cardiopulmonary arrest immediately after FBA. Although foreign bodies were removed as quickly as possible, cardiac arrest was irreversible.¹¹ Eren S et al reviewed hospital records of 1160 children <or=15 years old referred for suspected foreign body aspiration. Bronchoscopy under general anaesthesia was performed on all patients. Foreign bodies were successfully removed in 1068 (92%) children. The majority, 885 (76.3%), presented with a definite history of foreign body aspiration. Bronchoscopy was negative in 85 (7.3%) children. Watermelon seeds, found in 414 (38.7%) children, were the most commonly aspirated foreign bodies. Open surgical procedures were required for 21 (1.8%) children. Bronchial rupture related to bronchoscopy occurred in four children, two of whom died post-operatively. The overall mortality rate was 0.8%.¹²

CONCLUSION

Even in the absence of any visible physical or radiological evidence, sensitive patient populations with a suggestive history should be highly suspected of having tracheobronchial foreign bodies.

REFERENCES

1. Boyd M, Chatterjee A, Chiles C, Chin R Jr. Tracheobronchial foreign body aspiration in adults. *South Med J.* 2009 Feb;102(2):171-4.
2. Raos M, Kovac K, Dodig S. Bronchial impairment of main bronchus by aspiration of ferrous sulphate tablet. *Ljec Vjesn.* 2004;126:194-6.
3. Zerella JT, Dimler M, McGill LC, Pippus KJ. Foreign body aspiration in children: Value of radiography and complications of bronchoscopy. *J Pediatr Surg.* 1998;33:1651-54.
4. Abellan Martinez MC, Mendez Martinez P. Repeated haemoptysis for foreign body bronchial aspiration: presentation of a case and review of literature. *Ann Med Interna.* 2000;17:652-4.
5. Lynch JB, Kerschner JE, Aiken JJ, Farber N, Bousamra M. Use of mediastinoscopy for foreign body removal. *Int J Pediatr Otorhinolaryngol.* 1999;50:225-8.
6. Svedström E, Puhakka H, Kero P. How accurate is chest radiography in the diagnosis of

- tracheobronchial foreign bodies in children? *Pediatr Radiol.* 1989;19(8):520–522.
7. Black RE, Choi KJ, Syme WC, Johnson DG, Matlak ME. Bronchoscopic removal of aspirated foreign bodies in children. *Am J Surg.* 1984 Dec;148(6):778–781.
 8. Kosloske AM. Bronchoscopic extraction of aspirated foreign bodies in children. *Am J Dis Child.* 1982 Oct;136(10):924–927.
 9. McGuirt WF, Holmes KD, Feehs R, Browne JD. Tracheobronchial foreign bodies. *Laryngoscope.* 1988 Jun;98(6 Pt 1):615-8.
 10. Hasdiraz, L., Oguzkaya, F., Bilgin, M., & Bicer, C. Complications of bronchoscopy for foreign body removal: experience in 1,035 cases. *Annals of Saudi medicine* 2006; 26(4): 283–7. <https://doi.org/10.5144/0256-4947.2006.283>
 11. Çiftçi AO, Bingöl KM, Senocak ME, Tanyel FC, Büyükpamukçu N. Bronchoscopy for evaluation of foreign body aspiration in children. *J Pediatr Surg.* 2003;38:1170–76.
 12. Eren S, Balcı AE, Dikici B, Doblán M, Eren MN. Foreign body aspiration in children: experience of 1160 cases. *Ann Trop Paediatr.* 2003;23:31–7.