

Original Research Article

Rigid bronchoscopy for foreign body removal: an overview

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ABSTRACT

Background: Foreign body aspiration is a potentially life threatening medical scenario. Immediate diagnosis and intervention can save the many adverse outcomes. The aim of our study was to determine the pattern, presentation and management of foreign body aspiration in our population.

Methods: This is a retrospective study carried out in the Department of ENT and Head and Neck Surgery And Surgical Oncology, Karnataka Institute of Medical Sciences, Hubballi comprising of 22 patients with foreign body aspiration admitted to our department from July 2015 to February 2017. All patients with high suspicion of foreign body aspiration were included in our study. All patients underwent rigid bronchoscopy under general anesthesia.

Results: In our study, majority of our patients were in the paediatric age group below the age of three years. History was always accidental inhalation of the foreign body. Areca nut was the most common foreign body removed. All patients who underwent successful foreign body removal following rigid bronchoscopy completely recovered from their ailments.

Conclusions: It could be concluded that rigid bronchoscopy is treatment of choice in management of foreign body aspiration especially in pediatric population. The gold standard for the diagnosis and management of this condition is rigid bronchoscopy under general anaesthesia.

Keywords: Rigid bronchoscopy, Foreign body removal, Paediatric age

INTRODUCTION

Foreign body aspiration is always accidental and sudden with very high mortality. It is a life threatening condition and needs urgent intervention. Rigid bronchoscopy, using rigid ventilating bronchoscope, is a lifesaving procedure for removal of foreign body in emergency situation¹. Accidental foreign body inhalation is a relatively common occurrence in the pediatric population and may lead to asphyxiation and death especially among the younger population.¹ Etiology is different, and this condition is typical for all ages with highest incidence in pediatric population. Efficient diagnosis and FB extraction are imperative in the treatment providing less mortality and morbidity. Foreign body aspiration is commonly encountered in children.² Presenting symptoms of an inhaled foreign body depends on time

since aspiration. Physical examination findings include fever, stridor, intercostal and subcostal retractions, and decreased breath sounds. Obstructive emphysema of the same or contra lateral side is found in majority of the cases.

The study was done with the objective to determine the pattern, presentation and management and outcome of foreign body aspiration in our population.

METHODS

This is a retrospective study carried out in the Department of ENT, Karnataka Institute of Medical Sciences, Hubballi, from July 2015 to February 2017. All patients with suspected foreign body aspiration were included in this study. All patients underwent

investigations like chest radiographs and in select few underwent virtual bronchoscopy. All patients underwent rigid bronchoscopy under general anaesthesia.

Inclusion criteria

The inclusion criteria of this study were all patients of suspected foreign body inhalation.

Exclusion criteria

The exclusion criteria included all patients with no history of foreign body aspiration who were critically ill to undergo investigations or rigid bronchoscopy.

RESULTS

In this study, a total of 22 cases were admitted with suspected foreign body aspiration during the period of July 2015 to February 2017.

Sex distribution

Out of total 22 patients included in this study 12 were male and 10 were female (Table 1).

Table 1: Sex distribution.

Sex	No	Percentage (%)
Male	12	54.4
Female	10	45.5

Age distribution

In our study, 77.2% were below the age of 4 years, 13.4% in the age group of 4-14 years. There were 1 adult in our study with accidental inhalation of areca nut while chewing. Thus in our study highest number of patients belongs to the paediatric age group (Table 2).

Table 2: Age distribution.

Age (in years)	No	Percentage (%)
<1	1	0.45
1-4	17	77.2
4-14	3	13.4
>14	1	0.45

Clinical presentation

Five children reported within the 24 hours of the event, 6 children were brought after 1 week duration but majority of children, 11 were reported within a week. A definitive history of choking following foreign body aspiration was present in 5 children. There were two adults of age 14 and 60 years.

The clinical features included hurried breathing/difficulty in breathing in 8 patients, fever and cough in 7 cases and

noisy breathing in 8 cases. Majority of children came from rural areas.

Table 3: Type of foreign body.

Type of foreign body	No	Percentage (%)
Areca nut	13	65
Ground nut	4	20
Cocunut piece	1	5
Whistle	1	5
Stone	1	5

Management

All the patients had chest x ray taken showing features of bronchopneumonia in 8 cases, collapsed lung in 2 cases and consolidation in 2 cases. The chest x ray was normal in cases presented immediately with history of foreign body aspiration. One chest x ray showed the foreign body (stone) haziness in the carina. Virtual bronchoscopy was done in three cases of suspected foreign body and was confirmed of the presence of foreign body (Figure 1). Rigid bronchoscopy was performed in all cases.

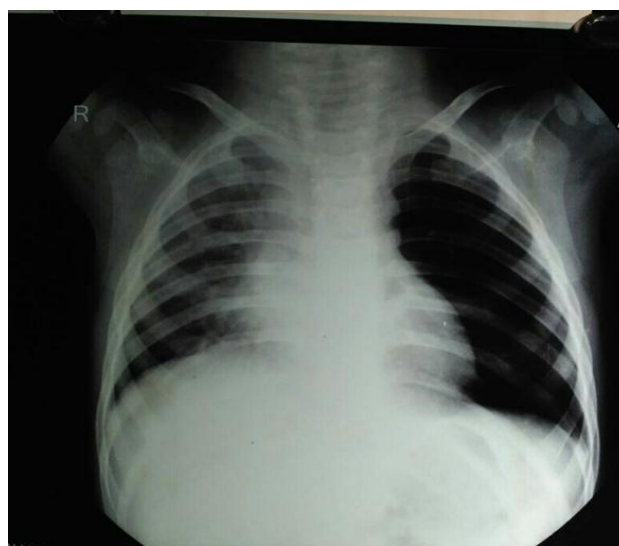


Figure 1: Chest radiograph showing left lung collapse following groundnut inhalation.

In our study, 2 cases showed the presence of thick mucus secretion and in rest of the 20 cases, foreign body was successfully removed-areca nut being the most common foreign body extracted. The mortality was zero following the successful removal of foreign body.

DISCUSSION

Foreign body aspiration occurs most commonly in infants between 1 and 3 years old, with a peak incidence in the second year of life. It is a leading cause of mortality in children 1–3 years old.³ Otolaryngologists should consider foreign body aspiration in the airway in the differential diagnosis of any patient with the complaints

of stridor, dyspnea, sudden onset of cough and intractable and recurrent lower respiratory tract infections.⁴ In most series, the mortality is zero for patients who reach the hospital alive. The list of objects inhaled is long. However, 'food' is the commonest category of items aspirated, and nuts, especially peanuts, are the commonest type of food inhaled. In our study areca nut was the commonly inhaled object because of the easy availability of the same.

Where the foreign body lodges in the airways depends on its size and shape. The presenting symptoms of foreign body aspiration range from none to severe airway obstruction, and may often be innocuous and nonspecific.⁵ In many series of children, foreign bodies were as likely to be found in the left as in the right lung. Some foreign bodies lodge in the trachea, but the majority are found in the proximal airways. Small, sharp objects can lodge in the subglottic area, where they can be difficult to diagnose.

Radiographic imaging can be helpful if the object aspirated is radiopaque or if there are signs of hyper expansion on expiration. However negative-imaging studies, do not exclude the presence of a foreign body in the airway. The longer a foreign body resides in the airway, the more likely it is to migrate distally and give an inflammatory reaction leading to granulation and impaction. When this occurs, symptoms of chronic cough and wheezing may mimic asthma like condition. When the chest radiograph is normal and the clinical diagnosis suggests aspirated foreign body, helical CT and virtual bronchoscopy can be considered in order to avoid needless rigid bronchoscopy.⁶ Complete diagnostics and removal of FB should be done in the shortest possible time, which sometimes could be complicated after the first spontaneous shocking asphyxia attack has gone, and appearance of a latent stadium when the symptoms reveal another respiratory disease.⁷

Rigid bronchoscopy under general anesthesia is preferred method for removal of aspirated foreign body in pediatric patients. General anesthesia can be avoided in adults, but presence of anesthesiologist with proper workstation to combat emergency situation is essential. It is the rigid bronchoscope which has been used for the removal of foreign bodies in children. The noteworthy advantages of the rigid bronchoscope, when used in children is its ability to function as an endotracheal tube ensuring control of the airway and as a conduit through which the foreign body can be removed.⁸ An accurate pre-operative diagnosis is most important in operative management of irregularly shaped foreign bodies. The gold standard for diagnosis and management of this condition is rigid open tube bronchoscopy under general anaesthesia. The best way to manage it is an early diagnosis and a rigid bronchoscopy removal under general anesthesia used by fully trained staff. The prevention of this domestic

accident should consider the population lifestyle and cultural habits to be more effective.⁹ Heightening public's awareness is the key to prevention of pediatrics FB aspiration.¹⁰

CONCLUSION

Foreign body aspiration is always accidental and sudden with very high mortality. It is a life threatening condition and needs urgent intervention. Rigid bronchoscopy represents a safe and effective tool in the management of foreign body aspiration. Heightening public's awareness is the key to prevention of pediatrics FB aspiration.¹⁰

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