

## Presentation and management of impacted foreign bodies in pediatric tracheobronchial tree

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**Objective:** To determine the type, clinical feature and management of inhaled foreign body in children.

**Methodology:** This descriptive study was done at the department of Otolaryngology-Head & Neck Surgery, Fauji Foundation Hospital, Rawalpindi from Feb 2016 to Feb 2017. A total of 70 cases were successfully treated by endoscopy. Rigid endoscopy as done in 98.6% and direct laryngoscopy in 1.4% for foreign body removal. Frequency of presenting complaints that was dyspnea, cyanosis, choking, coughing, wheezing, tachypnea; different types of foreign bodies in tracheobronchial tree and X-ray Chest findings like the object, hyperinflation, emphysema, bronchiectasis or atelectasis were analyzed. Data were analyzed using SPSS version 17.

**Results:** Out of 70 patients, 72.85% were male and 27.15% were female with age range from 8 months to 12 years. The most common symptom was cough in 68.65%, choking in 62.9% and dyspnea in 41.4% patients. Peanuts were the most common object in 42.85% followed by whistle, as a whole or part in 30%, pins and needles in 12.85%, plastic pellets in 11.4% and miscellaneous objects in 2.85%.

**Conclusion:** Bronchoscopy is the most effective diagnostic and therapeutic modality due to shortcomings of history, physical examination and radiology. Early diagnosis and immediate removal are essential. (Rawal Med J 202;45:619-621).

**Keywords:** Bronchoscopy, therapeutic modality, tracheobronchial tree.

### INTRODUCTION

Inhalation of foreign bodies tracheobronchial tree is a common problem in children.<sup>1</sup> Most cases occurs between age of 1 and 3 years.<sup>2</sup> It carries a high risk to life but proper evaluation, sound clinical judgment, sufficient and rapid treatment is linked to very low mortality.<sup>3</sup> Foreign bodies in tracheobronchial tree are a key cause of morbidity and mortality in children aged below 10 years.<sup>4</sup> Mostly inhaled foreign bodies in children are stuck in the upper airway, undoubtedly because of smaller diameter of bronchial tree in this age group.<sup>5</sup> Due to more vertical disposition of right bronchial tree, foreign bodies are lodged in it.<sup>6</sup>

The type of inhaled foreign body with which children mostly come in contact depends on the area and type of object.<sup>7,8</sup> Sudden onset of respiratory distress is the key to diagnose in pediatric patients.<sup>9,10</sup>

Those who present late may presents with fever, difficulty in breathing, hemoptysis, pneumonia, lung abscess or pneumothorax. Most foreign bodies can be removed safely with effective teamwork

between anesthetists, surgeons and proper size of rigid bronchoscope.<sup>11,12</sup> The aim of this study was to determine type, clinical feature and management of inhaled foreign body in children.

### METHODOLOGY

In this descriptive study, 70 patients between the age of 8 months to 12 years with both gender were included with inhaled foreign body in tracheobronchial tree from February 2016 and February 2017 at department of Otolaryngology-Head & Neck Surgery, Fauji Foundation Hospital, Rawalpindi. Consent was taken from the parents and study was presented to the ethical committee.

Rigid endoscopy was done almost in all patients while direct laryngoscopy on one patient and foreign bodies were removed. Nature of foreign bodies were noted.

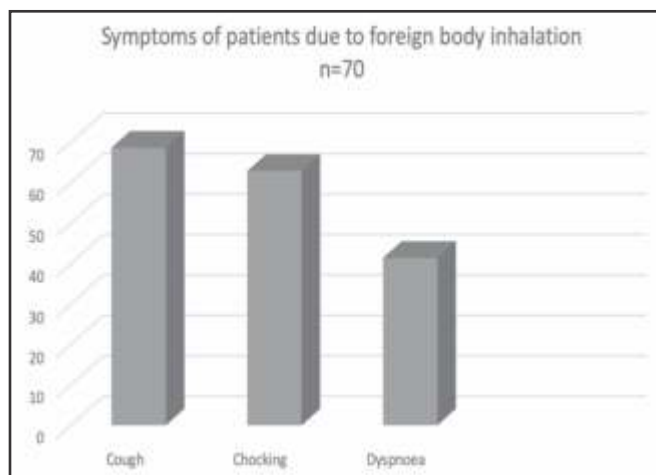
**Statistical Analysis:** Data were analyzed using SPSS 17. Frequency of presenting complaints, those were dyspnea, cyanosis, choking, coughing, wheezing, tachypnea; different types of foreign

bodies in tracheobronchial tree and x-ray of chest findings like the object, hyperinflation, emphysema, bronchiectasis or atelectasis were analyzed.

## RESULTS

Out of 70 patients, 72.85% were male and 27.15% were female with age range from 8 months to 12 years (mean  $4.1 \pm 2.71$ ). Most of the patients (60%) presented within first 24 hours, 22% within 2-5 days because they live in far-off areas, 12% presented within 6-10 days. 4.3% were either misdiagnosed by general practitioners and treated as cases of lower respiratory tract infection or referred by pediatric department to ENT department. The most common symptom was cough 68.65%, choking 62.9% and dyspnea in 41.4% as shown in (Figure).

**Fig. Symptoms of foreign bodies' inhalation.**



**Table. Different findings on chest x-ray.**

Chest X-ray Findings	Percentage
Object visualization	32.9%
Atelectasis	10%
Emphysema	44.3%
Bronchiectasis	10%
Hyperinflation	16.6%

Coughing was seen in 47.1% patients, wheezing in 35.7%, tachypnea in 34.4% and cyanosis in 7.5%. On x-ray chest, different findings were visible (Table 1). All cases were successfully treated by

endoscopy. Rigid endoscopy as done in 98.6% and direct laryngoscopy in 1.4% and foreign bodies removed. Peanuts were the most common object in 42.85% followed by whistle, as a whole or part of it 30%, pins and needles 12.85%, plastic pellets 11.4% and miscellaneous objects in 2.85%.

## DISCUSSION

Although the accidental inhalation of foreign body can occur at any age but its occurrence in pediatric age group is more common due to their natural curiosity, tendency to explore things by mouth and permitting children to play while drinking or eating.<sup>13</sup> Choking, stridor, wheeze and coughing are the common presentations.<sup>14</sup> Sometimes there may be no history of foreign body inhalation and so high degree of suspicion is needed for diagnosis.<sup>15</sup> The diagnosis is difficult, despite innovations in radiological procedures, and endoscopy is ultimate procedure for definitive diagnosis.<sup>16,17</sup> Endoscopic removal of inhaled foreign body is the treatment of choice and should be performed in the controlled setting of an operating room by experienced person trained in airway foreign body removal.<sup>18-21</sup> Our study comprises of total 70 cases out of which 72.85% were male and 27.15% females. Other studies also showed male preponderance.<sup>22</sup>

All the patients were of pediatric age group. The elder one was of 12 years and youngest one was 8 months old with mean age of 4 years. This study correlates with other studies.<sup>23</sup> Majority of the patients presented with 1<sup>st</sup> 24 hours with history of foreign body inhalation, similar to other studies.<sup>4</sup> In our study, we had radio-opaque foreign bodies in 32.9%, emphysema in 44.3% and hyperinflation of lungs in 18.6%, atelectasis in 10% and bronchiectasis noted in 10% of patients.

Complications of bronchoscopy for foreign body removal may occur even in experienced hands. Post procedure antibiotics and steroids were given to all patients to avoid laryngeal edema and infectious complications. Preventive measures, however, continue to remain the best by educating the parents with the danger of allowing young children to have peanuts, plastic whistles, edible seeds or leaving them attended with small objects.

## CONCLUSION

Bronchoscopy is the most effective diagnostic and therapeutic modality in management of inhaled foreign bodies in children. Early diagnosis and immediate removal are essential to prevent morbidity and mortality.

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