

FOREIGN BODY IN PEDIATRIC AIRWAYS

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ABSTRACT

Objective: To evaluate the nature of foreign bodies in pediatric airways and its management. **Design of Study:** Prospective: Setting: Allied Hospital Faisalabad: **Period:** From Jan 2001 to Dec 2002. **Material & Method:** Fifty patients were included in the study between the age of 1 year to 12 years. The patients were admitted through OPD, emergency and Pediatric department. The data was collected on the basis of history, physical examination, investigations, management and follow up. The complications and cure rate was determined. **Results:** Total 50 patients were included in the study out of which 42(84%) were male and 8 (16%) female. The male to female ratio was 5:1. The most common foreign body was whistle 14 (28%). The most common physical sign was reduced air entry in the lung present in 48(96%) of patients. The most common site of lodgement of foreign body was right main bronchus 38(76%). The commonest symptoms were cough 50(100%) and respiratory distress 45(90%). Foreign body was removed in 48 (96%) of patients. **Conclusion:** The tracheobronchial foreign body is a common ailment in children with high morbidity and mortality, so patients must be properly diagnosed and treated meticulously to avoid complications.

Keywords: Foreign Body Tracheobronchial Tree

INTRODUCTION

Foreign body aspiration is a common problem seen in otolaryngology. Most commonly Foreign bodies are aspirated during the toddler age 1 -3 years^{1,2,3} with second peak between 10-11 years⁴. Inhalation of Foreign body in tracheobronchial tree can occur through mouth, nose, tracheostome or tracheostomy tube. The most common objects aspirated by young children are food products. Most common in the world literature is peanut^{5,6}, but seeds and other nuts are common as well. Site of impaction of foreign body in tracheobronchial tree has a great importance in management plan. Site of impaction depends upon size, shape, weight, type and posture at the time of inhalation. There is a general agreement based on reports published in national and international literature that right main bronchus is the commonest site for lodgment of foreign body^{7,8}.

The right main bronchus is wider than left and interbronchial septum projects to the left but in children

this difference is less pronounced there is relatively equal distribution of foreign body between the right and left bronchial tree⁹. In majority of cases the diagnosis can be made on the basis of case history^{9,10}. Signs and symptoms of foreign body inhalation depend upon many factors like type, size, shape, duration of its presence in the airways and site of lodgement¹¹. It is one of the most common cause of sudden death in children¹². The relevant investigations¹³ required to confirm the diagnosis are x-ray neck lateral view, x-ray chest, Fluoroscopy, CT scan, Bronchography, Radio nuclide lung scan and diagnostic bronchoscopy.

Morbidity and mortality is still significant despite advances in endoscopic technology and anesthesiology^{14,15}. Foreign bodies of tracheobronchial tree are removed most safely under general anesthesia using the ventilating rigid bronchoscope. In those cases in which foreign body is impacted in larynx or upper trachea, presents with severe airway obstruction, may need emergency tracheostomy to restore airway.

When foreign body is in lower tracheobronchial tree then the tracheostomy is used for other purposes like to assist ventilation facilitated anesthesia, to remove the large foreign body which endanger injury to the vocal cords and difficult to remove along bronchoscope, as an alternative path for bronchoscopy, when there is respiratory distress after bronchoscopy due to edema of larynx, to remove thick secretions in the tracheobronchial tree after impaction of foreign body for long duration. The complications¹⁶⁻²¹ due to foreign body in tracheobronchial tree are pneumonia, lung collapse, obstructive emphysema, haemoptysis, subglottic edema, lung abscess, tracheo-oesophageal fistula.

The complications of procedure are either due to anesthesia or due to instrumentation. The anesthesia complications include vocal cord damage, tracheal mucosal abrasion, lung collapse, cardiac arrhythmias, respiratory arrest and cerebral anoxia. The complications due to bronchoscope are trauma to lips, teeth, tongue, pharyngeal wall, incomplete removal or failure to remove the foreign body. Administering antibiotics and corticosteroids before bronchoscopy can reduce complications²².

MATERIAL & METHODS

Between Jan 2001 and Dec 2002 fifty patients with tracheobronchial foreign bodies at different levels were included in the study. This study was carried out in the department of ENT Allied Hospital Faisalabad. Patients included in the study were those reported in the ENT emergency, OPD and few referred from pediatric department. The patients included were of age one year to 12 years. Those patients above the age of 12 years were excluded from the study. All patients were admitted in ENT ward, 36 through emergency, 8 from OPD and 6 were referred from pediatric department. The data was collected on the basis of history, physical examination, investigations, management and follow up. In all patients foreign bodies were removed under general anaesthesia. In all cases KARL STORTZ rigid bronchoscope was used.

The following formula was used to select the diameter of

the bronchoscope;

Age in year/4+4.5 mm.

RESULTS

Fifty patients presented in the ENT Department of Allied Hospital Faisalabad with tracheobronchial foreign bodies out of these 36(72%) were admitted through emergency, 8(16%) came from OPD and 6(12%) were shifted from pediatric department. 42 (84%) were boys and 8(16%) were girls. Male to female ratio was 5:1. The age ranged from one year to 12 years. History of foreign body inhalation was found in 35(70%) cases while in 15(30%) patients this condition was suspected purely on clinical grounds.

Table-I. Type of foreign bodies

organic	Inorganic
Peanut	Metal
Vegatables	Bone
Seeds	Plastic whistle
Betalnuts	Screws
Orange seeds	Wire
Wheat stalk	Beads

Table-II. Suggested bronchoscope size

Bronchoscope size	Age
3mm	New born to 3 months
3.5 mm	4-6 months
4 mm	7 months to 3 years
5mm	4 years to 12 years

Table-III. Sex Distribution

Sex	Number	% age
Male	42	84%
Female	8	16%

The whistle accounted for the highest incidence 14(28%) followed by betel-nut which were 11(22%), non vegetative foreign bodies were 17(34%) and vegetative were 7(14%). Decreased air entry in the affected lung was the commonest physical sign present in 48(96%) patients.

Age	No of patients	%age
Up to 1 year	10	20
1-3 years	11	22
3-5 years	8	16
5-7 years	5	10
7-9 years	9	18
9-12 years	7	14

Admitted via	No. of pts	%age
Emergency	36	72%
Out door	8	16%
Pediatric ward	6	12%

Time	No of patients	%age
With in 5 hours	16	32
After 1 day	16	32
After 3 days	10	20
After 1 week	5	10
After 1 month	3	6

Foreign bodies were removed in 48(96%) of the patients and 2(4%) had no foreign body. Most common site of lodgement was right main bronchus.

The site incidence in right main bronchus was 38(76%), left main bronchus 7(14%), trachea 3(6%) and at carina

2(4%). The commonest symptoms at presentation were cough 50(100%) and respiratory distress 45(90%).

Presentation	No of patients	%age
Cough	50	100
Respiratory distress	45	90
Cyanosis	18	36
Whistling	14	28
Wheeze	10	20
Fever	10	20

Type	No of patients	%age
Whistle	14	28
Betelnut	10	20
Plastic bead	6	12
Almond	4	8
Dates	1	2
Plastic Button	1	2
Water melon seed	4	8
No foreign body seen	2	4
Ball point tip	1	2
Electric wire	1	2
Metalic plug	1	2
Part of ball point	1	2
Stone	1	2
Peanut	3	6

DISCUSSION

Foreign body aspiration is one of the leading cause of death seen in a study in USA in children under four years

of age⁶. Inhalation of Foreign body in tracheobronchial tree is common in children between 1-5 years of age as in our study 60% which is comparable with international and national studies. In our study 70% had definite history which is comparable to the work done internationally on foreign body inhalation²³. Many Foreign bodies are a diagnostic challenge and confirmation can be difficult if the acute attack is long forgotten^{24,25}.

In our study males were affected more and male to female ratio was 5:1. This might be associated with a more aggressive and curious nature of young boys²⁶. 34% cases took more than 48 hours to be referred to an appropriate hospital. This is at variance with Cohen's series, where foreign body aspiration was recognized and treated with in 24 hours⁹.

Western literature reveals peanuts as the commonest foreign body^{27,28}. Our commonest foreign body aspiration was plastic whistle (28%). The right main bronchus is the commonest site for lodgment of foreign body²⁹. Our study also shows that 76% lodgment was in right bronchus.

CONCLUSION

The aspiration of foreign body in tracheobronchial tree is a serious matter. We must have index of suspicion in a child who presents with sudden respiratory distress or paroxysmal cough without fever. Absence of the classical history and sign symptoms does not rule out suspicion of foreign body inhalation. A history of repeated chest infection especially failure of medical treatment to relieve a recurrent pneumonia should direct the attention of the pediatrician to the presence of foreign body in the airway. Small objects with danger of inhalation should be kept away from children.

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