EXPERIENCE WITH REMOVAL OF FOREIGN BODIES TRACHEO-BRONCHEAL TREE WITH RIGID BRONCOSCOPE

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ABSTRACT

Objective: The aim of the study was to evaluate the presentation and management of different types of foreign bodies in tracheo-bronchial tree (TBT).

Material and Methods: The study was conducted from July 2001 to December 2001 at the department of ENT, PGMI, HMC Peshawar. Patients with history of foreign body inhalation were included in the study. Relevant history was recorded. The data collected was age and sex of patients, history of foreign body and type of foreign body inhalation, duration, symptoms and signs of foreign body inhalation. The findings of X-ray chest, treatment given and peri-operative complications and bronchoscopic findings were recorded. Bronchoscopy was done under general anaesthesia.

Results: Out of 50 patients, 32 (64%) were less than three years of age. Thirty two (64%) patients reached to the hospital with-in 24 hours. The commonest symptom was chocking sensation in 36 (72%) cases. Radiological changes, suggestive of foreign body tracheo- bronchial tree were observed in 16 (32%) of cases. The commonest foreign body removed was peanut in 27 (54%) cases. Right main bronchus was the common site for foreign body lodgment. Common complications encountered were laryngospasm in 3 cases (6%) and cardiac arrest in 2 cases (4%), with mortality rate of 2% (1 case).

Conclusion: chocking, stridor, wheeze and coughing are the common presentations of foreign body tracheo-bronchial tree inhalation. Rigid bronchoscopy in experienced hands under general anaesthesia is safe and effective diagnostic and therapeutic procedure.

Key Words: Foreign bodies, Tracheo-bronchial Tree, Rigid Bronchoscopy.

INTRODUCTION

Foreign body in tracheobronchial tree is leading cause of accidental death in childhood especially among those, younger than three years[1,2]. The incidence is rather increasing due to the excessive marketing of small toys like whistles in top pops and the easy availability of peanuts and popcorns at home. It is estimated that almost 500-3000 children die per year in USA from asphyxia following inhalation of foreign bodies[3]. The maximum incidence of inhalation of foreign body occurs between the ages of one to three years[4]. Boys are more likely to inhale foreign bodies than girls for unclear reason[4]. The peak incidence of foreign body inhalation in childhood is of course related to the fact that children are in the habit of putting objects in their mouths to determine, their texture or taste[5]. In the past different techniques like postural drainage[6], Heimlich maneuver[7,8], tracheostomy, endoscopy under local anaesthesia have been tried to remove foreign bodies larynx and tracheo-bronchial tree, with variable results. With the advancement in ventilating bronchoscopes, improvement in illumination and advancement in anaesthesia, safe removal of foreign body tracheo-bronchial tree has been an easy task all over the world and the mortality has been reduced to less then 1% in expert hands[9].

The aim of this study was to evaluate the presentation and management of different types of foreign bodies in tracheo-bronchial tree (TBT) in a tertiary care unit.

MATERIAL AND METHODS

We conducted this descriptive study over a period of six months from July 2001 to December

CLINICAL FEATURES, AT THE TIME OF PRESENTATION

Clinical Features		Frequency (n=50)	Percentage
SYMPTOMS	Chocking	36	72
	Cough	32	64
	Stridor	25	50
	Intermittent dyspnoea	20	40
	Fever	12	24
	Voice change	10	20
SIGNS	Wheeze	24	48
	Rhonchi	15	30
	Reduced breath sounds	12	24
	Tachypnoea	11	22
	Crepitations	10	20

Table 1

2001 at the department of Ear Nose Throat, Head & Neck Surgery, Postgraduate Medical Institute, Hayatabad Medical Complex Peshawar. A total of fifty cases with history of foreign body inhalation were included in the study. All the cases were admitted for rigid bronchoscopy. These cases were referred for admission from casualty, and clinics in Paediatric wards. All the cases were evaluated on the basis of history, clinical and radiological examination. A printed questionnaire was designed to record all the relevant clinical information. The data collected was age and sex of the patients, history type of foreign body, duration, signs and symptoms, of foreign body inhalation, the findings of radiological investigation i.e. X-ray chest, treatment given and complications encountered during and after bronchoscopy were also recorded. Bronchoscopic findings were also recorded. Before the actual procedure, different sizes of bronchoscopes, light, suction apparatus, tracheostomy instruments were checked. We performed rigid bronchoscopy under general anaesthesia. Induction was done by intravenous route and mask. Patients were hyperoxygenated for a while. Appropriate size of bronchoscope was introduced. Maintenance of anaesthesia was done with Jet ventilation. After removal of foreign body and bronchoscopy, few patients were intubated for a short period that got hypoxia during the procedure. All the patients were kept in the operation theatre till complete recovery from anaesthesia. All the patients were kept in the ward for at least 24hours. Data obtained from the study was analyzed.

RESULTS

Out of 50 patients, 35(70%) patients were referred from emergency department, 9 (18%) patients from out patients department and 6(12%) patients from other units. Most of the patients 32(64%) were having age less than three years. Boys were more affected than girls i.e. 35 (70%) patients were males. Majority of the patients i.e. 35 (70%) were having clear cut history of foreign body inhalation while in 8(16%) patients foreign body inhalation was denied and 7(14%) cases were dubious. As for as the time between the incident of inhalations of foreign body and arrival of patient to the hospital is concerned, 42 (84%) patient reached with in 48 hours. The delay was more than 48 hours only in those patients who were admitted in Paediatric ward with no history of foreign body inhalation and who did not respond to medical treatment. The main presenting symptoms are shown in table 1.

Thirty four (68%) patients had normal chest X-ray's findings. Radiological findings are shown in Table-2.

Peanuts were the most common foreign body in 27 (54%) cases followed by whistles in 08 (16%) cases. Nature and type of foreign body is shown in Table-3.

Right main bronchus was the common site of foreign body impaction i.e. in 30 (60%) cases

RADIOLOGICAL FININGS AT THE TIME OF PRESENTATION OF FOREIGN BODY INHALATION

Finding of X-Rays	No. of Patients (n = 50)	%age
Normal X-Rays findings.	34	68
Radio-opaque foreign body seen.	06	12
Compensatory emphysema.	06	12
Pneumonia (consolidation)	03	06
Atelectasis.	01	02

Table 2

TYPES OF FOREIGN BODES REMOVED BY ENDOSCOPY

Types of foreign body	No. of Patients (n = 50)	%age
Peanuts	27	54
Whistles	08	16
Bead	04	08
Bean seeds	04	08
Maize	02	04
Plastic pieces	02	04
Chalia	01	02
Screw	01	02
Paper pin	01	02

Table 3

COMPLICATIONS OF RIGID BRONCHOSCOPY

Complications	No. of Patients (n = 50)	%age
Laryngospasm	3	6
Resuscitated cardiac arrest	2	4
Respiratory arrest	1	2
Cyanosis	1	2
Trauma to lip and teeth	1	2

Table 4

followed by left main bronchus 13 (26%) case, trachea 5 (10%) cases, larynx 2 (04%) cases. Common complications encountered during the procedure were laryngospasm in 3(06%) cases and resuscitated cardiac arrest in 2 (04%) cases (table 4). One patient died with mortality rate of 2%. The results of bronchoscopy were good and majority i.e. 40 (80%) patients were discharged with in 24-48 hours. Only those who had pre operative complications i.e. consolidation and atelectasis, were kept for more than 48 hours.

DISCUSSION

Foreign body inhalation in tracheo-bronchial tree causes majority of accidental death, in childhood[1,2,9]. Diagnostic and therapeutic delay may cause a significant increase in morbidity and mortality. In majority of the cases in our study, the history of foreign body inhalation was clear. Most of the patients are brought to the hospital in emergency as is evident from the study i.e. 42 (84%) cases.

The mean time between inhalation of foreign body and endoscopy was three days in our study, in contrast with findings made by Schmidt and Mancgold[10] where the mean time between inhalation and endoscopy was 5.4.days. The problem is commonly seen in preschool going children[3,4,10] although no age is exempted. The peak incidence of foreign body inhalation in early childhood is probably related to the fact that children in this age are more inquisitive and are in the habit of putting objects in their mouths while playing to determine their texture and taste[5]. Incomplete dentition and absence of molars are other possible reasons for improper chewing and inhalation of foreign bodies like peanuts.

In our study, 35 (70%) patients were males. Boys are usually more affected than girls[3,4,11]. The reason is unknown but probably male children are more active, aggresses and exploring in nature[3]. The main presenting feature was choking sensation and dyspnoea as majority of the patients were brought to the hospital with in 24-48 hours and did not have features of long standing foreign body inhalation, like unexplained fever, cough and wheeze. This type of presentation is slightly different from other studies where the main presenting symptoms were coughing with subsequent dyspnoea and audible wheezing[11], but similar to some other reports[12].

The diagnosis of foreign body tracheo-bronchial tree is based on high degree of suspicion and cumulative evidence on history, physical examination and chest radiograph. X-ray chest is most of the time normal as majority of the foreign bodies are radiolucent and the patients are brought with in 24-48 hours of inhalation. In our study, 34(68%) cases had normal X-ray chest while 6 (12%) cases showed foreign bodies and 10 (20%) cases showed other pathological findings like emphysema, pneumonia which is consistent with other report[13].

Our study like most other reports revealed that majority of the foreign bodies were organic in origin and were lodged in the right main bronchus[4,11,14,15]. The most common foreign body removed was peanut in our observation, though the frequency and type of foreign body varies with the regional feeding habits and socio economic status of the people[3,4,10,15-17]. Complications associated with the procedures of rigid bronchoscopy are minimal in experienced hands. With improvement in anaesthesia techniques, it is quite safe and effective for both diagnostic and therapeutic purposes[18]. Instead of the fact that children with foreign bodies in their tracheo-bronchial tree are having compromised air way and prone to complications, the rate of its occurrence in the form of resuscitable cardio respiratory arrest,

laryngeal odema, cyanosis and trauma to the relevant structure was not higher than other reports[10,14-17]. The mortality rate in our study is comparable with other reports which ranges from 0-2%[9,10,15,19]. Hospital stay of these cases is usually short and majority of the patients were discharged with in 24-48 hours except those who were having pre-op or per-operative complications[13,17].

CONCLUSION

Foreign body tracheo-bronchial tree is an important cause of morbidity and mortality in paediatric age group. The probable reasons being lack of health education on the part of parents, easy and cheap availability of peanut and toys. Rigid bronchoscopy is not only 100% diagnostic but the improved lens system and anaesthesia techniques have revolutionized the safe and effective removal of foreign body tracheo-bronchial tree in experienced hands.

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