

PATTERN OF FOREIGN BODIES AERO DIGESTIVE TRACT-A SINGLE CENTRE STUDY

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ABSTRACT

Objective: To find out the pattern of foreign bodies inhaled or ingested in a series of patients.

Study Design: Case series.

Place and Duration of Study: Ear, Nose and Throat (ENT) department, Pak Emirates Military Hospital (PEMH) Rawalpindi, Jan 2016 to Dec 2016.

Methodology: A total of 46 cases of foreign body upper aero digestive tract who presented in the ENT Department, PEMH Rawalpindi in 2016 were included in this study. Twenty eight cases were of foreign body esophagus and 18 were of foreign body airway. The age, gender, duration of foreign body lodgment, types of foreign body's physical signs and symptoms were recorded. Relevant radiographic studies were performed.

Results: Out of 46 patients of foreign body aero digestive tract 33 were males and 13 were females. The overall frequency of foreign bodies' upper aero digestive tract was 46 (0.14%) with 28 (0.08%) being foreign bodies esophagus and 18 (0.06%) foreign bodies airway. In 50% cases of bronchial foreign bodies were in age group 0-3 years. The most frequent foreign body in the esophagus was coin in 13(46.4%) followed by chicken bone 5 (17.8%) and fish bone 3 (10.7%). Peanuts, peas, and beans were predominant component of the airway foreign bodies constituting 6 (33.3%), 3 (16.6%) and 3 (16.6%) respective of the total. Most frequent sites of impaction of the foreign body were cervical esophagus 16 (34%), right main bronchus 11 (23.9%) and left main bronchus 3 (6.5%).

Conclusion: Foreign body aero digestive tract is an uncommon but potentially life threatening presentation in ENT practice. Prompt management includes high index of suspicion and investigation to reach definitive diagnosis followed by intervention.

Keywords: Aero digestive tract, Bronchus, Esophagus, Foreign body.

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INTRODUCTION

Aero digestive tract foreign bodies are important causes of morbidity and mortality in two extremes of life¹. Case description of foreign bodies in the upper aero digestive tract is abundant². Ingestion and aspiration of foreign bodies occur most commonly in children's population younger than 3 years of age³. In most instances a causal relationship is established whereby a history of foreign body is followed by the acute onset of symptoms⁴. Symptoms include choking, gagging, coughing, wheeze, hoarseness, stridor, dyspnea, cyanosis, hemoptysis, aphonia, odynophagia, excessive drooling, or subjective feeling of the presence of a foreign substance⁵. A triad of

symptoms of coughing, choking and wheeze is present in over 90% patients of foreign body aspiration. Foreign body in aero digestive tract, whether by impaction causing airway obstruction or by penetrating sharp inorganic objects, can be life threatening particularly in children⁶.

Diagnosis of foreign body is usually clear and history is available in most of the cases but it can be difficult in some cases and especially in foreign body bronchus, which at times presents as pneumonia or other chest infections. History and radiographic investigations are helpful in most of the cases. Metal detectors have been used to detect metallic foreign bodies⁷. If X-ray and barium studies fail, CT scan may demonstrate small calcified esophageal foreign body. MRI is also being used especially for diagnosis of peanut inhalation⁸.

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Organic foreign bodies, in addition, elicit a lipoid reaction that rapidly progress to lipoid pneumonitis⁹. Prompt removal of offending foreign body is mandatory to save life of the patient. Treatment of foreign body aero digestive tract is removal¹⁰.

This study was carried out in the ENT department of Pak Emirates Military Hospital Rawalpindi from Jan 2016- Dec 2016 to find out frequency and types of foreign bodies inhaled or ingested in a series of patients in our society. Total number of patients who reported in ENT OPD of PEMH Rawalpindi during this period was 31,450 and out of these 46 was of foreign body aero digestive tract. Out of 46, 28 cases 28 were of foreign body esophagus and 18 of foreign body airway respectively. This study highlights various groups affected regarding age and gender. Data regarding duration of lodgment, availability of history and types of foreign bodies is also highlighted. Findings on meticulous physical examination, relevant investigations done and operative procedure carried out are also mentioned.

METHODOLOGY

Consecutive cases of foreign body in the upper aero digestive tract from Jan 2016 Dec 2016 who reported to ENT department of PEMH Rawalpindi at any hour of the day were included in the study. They included patients from all age groups and both gender. An informed consent was obtained for inclusion in the study. However, patients in whom definitive diagnosis was not established were excluded. Permission was obtained from hospital ethical review board. An effort was made to elicit adequate history and perform physical examination; all possible investigations which could help in the diagnosis were carried out. Various investigations carried out to get the diagnosis or to confirm it were X-ray neck Anteroposterior/Lateral view, X-Ray Abdomen plain film, Barium meal, Barium swallow. Most of the time diagnosis was clear with these investigations and other investigations like, esophagograms, bronchogram, Xeroradiography, fluoro-

scopy, CT Scan, MRI were not carried out in any of these cases. A detailed clinical assessment carried out including symptoms and signs before going for treatment of the patients. Data was analyzed using Statistical-Package for Social-Sciences-21. Descriptive analysis was done to determine percentage of prevailing study variables as well range of age and male to female ratio was calculated. Microsoft office 2010 was used for constructing charts and tables.

RESULTS

Total number of patients reported to ENT OPD during the period was 31,450. Out of these 46 cases were of foreign body aero digestive tract. Out of these 33 were males and 13 were females (M:F = 2.5:1). The age range was 1-72 years. Twenty eight cases were of foreign body esophagus and 18 cases were of foreign body airway. In

Table-I: Age groups presentation in foreign bodies in aero digestive tract.

Age in Years	Cases	
	Esophageal n (%)	Bronchial n (%)
0-3	8 (28.5%)	9 (50%)
4-6	6 (21.42%)	4 (22.2%)
7-20	4 (14.2%)	3 (16.7%)
21-40	2 (7.14%)	1 (5.6%)
40-60	3 (10.7%)	1 (5.6%)
>60	5 (17.8%)	-
Total	28 (100%)	18 (100%)

Table-II: Time of presentation.

Time of Presentation	Cases	
	Esophagusn (%)	Airway n (%)
0-4 hours	12 (42.9%)	6 (33.3%)
5-24 hours	13 (46.4%)	4 (22.2%)
days	3 (10.7%)	3 (16.7%)
>7 days	-	1 (5.6%)
No history	-	4 (22.2%)
total	28 (100%)	18 (100%)

cases of foreign body esophagus 16 cases (57.1%) were asymptomatic, 2 patient had dysphagia (7.1%), 5 patients had pain (17.9 %) and 5 patients came with pain and dysphagia (17.9%). In cases of foreign body airway various signs recorded were dyspnea, choking, cough, fever or pneumonia like picture. Sign could be elicited in 37 (80.4%) of cases and in 9 (19.6%) cases no signs

could be elicited. The overall frequency of foreign bodies aero digestive tract was 46 (0.14%) with 28 (0.08%) being foreign bodies esophagus and 18 (0.06%) foreign bodies airway. Nine (50%) of cases of bronchial foreign body were in the age group 0-3 years (table-I).

Foreign body removal was undertaken under general anesthesia in 39 (87.7%) cases from upper aero digestive tract. Peanuts, peas and beans were the predominant component of the airway foreign bodies constituting 6 (33.3%), 3 (16.6%) and 3 (16.6%) respectively of the total 18 cases as shown in fig-1. The most frequent foreign body found in the esophagus was coin in 13

of foreign body impaction was less than 5% in each site.

There was varied pattern of presentation after inhalation/ingestion of foreign bodies. Presentation to ENT department varied from within first 4 hours to more than one week. Most of esophageal foreign bodies 13 (46.4%) presented between 5 hours to 24 hours after history of ingestion. Whereas most of inhaled foreign bodies presented within first 4 hours and even 4 (22.2%) presented with no history and foreign bodies were found only on investigations as mentioned in table-II.

DISCUSSION

Presumptive diagnosis of foreign bodies in upper aero digestive tract is readily apparent; complications are the exceptions rather than the rule. After initial expression of the acute symptoms, a period of quiescence follows during which little or no evidence of problem is manifest¹¹. In most instances, a causal relationship is established whereby a history of foreign body is followed by acute onset of symptoms. Symptoms can vary greatly but usually include one or more of following: choking, gagging, coughing, wheeze, hoarseness, stridor, dyspnea, cyanosis, hemoptysis, aphonia, odynophagia, excessive drooling, or subjective feeling of presence of foreign substance. After an initial expression of the acute symptoms, a period of quiescence follows during which little or no evidence of problem is manifest¹².

A variety of foreign bodies have been extracted from the aero digestive tract. Commonest foreign bodies reported in the literature are coins, bone pieces, meat bolus, dentures, and glass balls¹³. Coin is the most frequently reported foreign body in the literature and Canadian dollar coins has presented another hazard for children¹⁴. In a study carried by Hussain *et al*¹⁵, coins constituted 55.6% of all foreign bodies in upper aero digestive tract whereas in another study done by Elhamady *et al*¹⁶, coins were the most common 37% of ingested foreign body. In our study, coin constituted almost 46% of the foreign body eso-

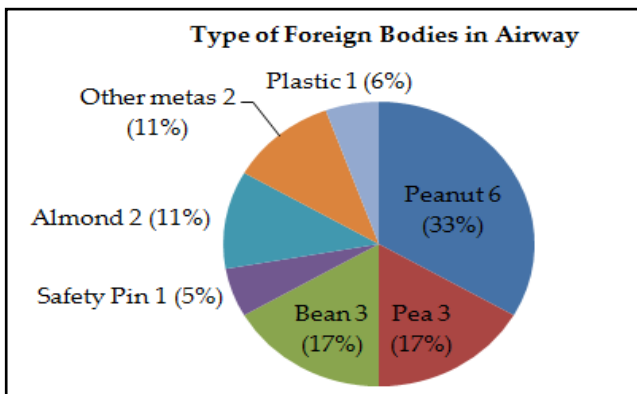


Figure-1: Types of foreign bodies airway.

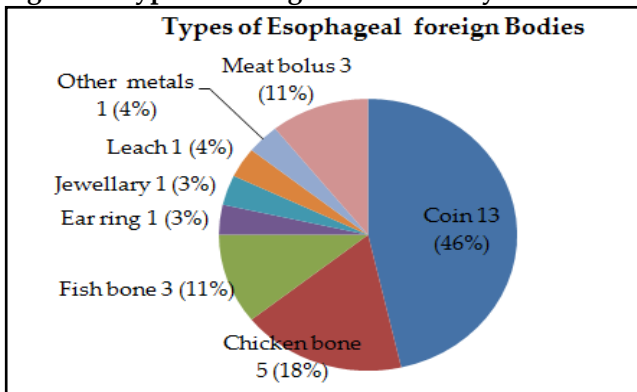


Figure-2: Types of foreign bodies esophagus.

(46.4%) followed by chicken bone 5 (17.8%) and fish bone 3 (10.7%) as shown in fig-2. Others were ear rings and jewelry, leach and other metallic objects. The most frequent sites of impaction of the foreign body were cervical esophagus 16 (34%). Right main bronchus 23.9% and left main bronchus 3 (6.5%). In all other sites the presence

phagus which is in line with already published studies. A common belief exists that those patients who wear false teeth are more likely to present with an impacted swallowed foreign body than those with a normal dentition and a study conducted by Okhakhu *et al*¹⁷, found that dentures were the most common foreign body in aero digestive tract in old people. A study of 65 patients in UK showed that there were no statistically significant differences between this group and patient with normal dentition¹⁸. Unusual foreign bodies like cockroach and broken tracheostomy tube have also been found in aero digestive tract¹.

In a study carried out by Okhakhu *et al*¹⁷, male to female ratio of 1.8:1 was reported and commonest age group affected was between 0 to 4 years. In our study, esophageal foreign bodies are common at age 0-3 year; next common age group is 4-6 years. Commonest age group for bronchial foreign body is found to be between 0-3 years and male to female ratio was 2.5:1. The commonest foreign body in bronchus was peanut. Our study is in agreement with other studies published on the subject that the most common site of enlodgement of foreign body is right main bronchus in airways²¹, and upper end of the esophagus in digestive tract²².

Pediatric tracheobronchial foreign bodies remain a significant cause of childhood morbidity and mortality²³. Because physician do not always obtain a history of aspiration, and because the signs and symptoms are nonspecific, diagnosis may be delayed, which increase the risk of complications when the foreign body is removed²⁴. Recent advances in bronchoscopic equipment and techniques have made removal of foreign body safer and more successful. Education of parents, child care providers and medical personnel can reduce morbidity and mortality due to foreign body aero digestive tract².

CONCLUSION

Foreign body aero digestive tract is an uncommon but potentially life threatening presentation in ENT practice. Prompt management

includes high index of suspicion and investigation to reach definitive diagnosis followed by intervention.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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