FREQUENCY OF ESOPHAGEAL FOREIGN BODIES AND THEIR SITE OF IMPACTION IN PATIENTS PRESENTING WITH FOREIGN BODY AERODIGESTIVE TRACT

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Abstract

Background: One third of foreign bodies retained in the gastrointestinal tract are present in the esophagus. Their management depends on the anatomic location, shape and size of the foreign body and duration of impaction

Objective: To determine the frequency, their site of impaction and method of removal of esophageal foreign bodies among patients reporting with aero digestive tract foreign body.

Material and Methods

This was a Descriptive study conducted at the ENT Department, Ayub Medical Institute (AMI) Abbottabad from June 2011 to June 2012. A total of 100 patients were included in the study presenting with foreign body ingestion that underwent esophagoscopy under general anesthesia. The type and site of impaction of foreign body and method of removal was noted.

Results: A total of 100 patients were included with age ranging from 1 to 90 years and the mean age was 14.60 ± 21.13 years. Among the patients with foreign body in aero digestive tract, the foreign body in esophagus was noted in 57% patients. The most common foreign body was coin (56%). The foreign bodies were seen most commonly among children of age 1 – 5 years

(55%). Rigid endoscopy was most common procedure performed to remove the foreign body (84%).

Conclusion: Esophageal foreign bodies are most commonly seen among patients with foreign body in aero digestive tract. Coins are the most common type. Rigid endoscopy is most commonly performed procedure to remove them.

Keywords: Foreign body esophagus, Aero digestive tract; Rigid endoscopy

Introduction

Foreign body ingestion is a commonly encountered problem in both children and adults in emergency departments. After nose and ear the esophagus is the commonest site for foreign body impaction (Akhtar & Haq, 2008). Eighty percent of impacted foreign objects are held up at cricopharynx (Han et al ,2009).Annual incidence of foreign body ingestion is 13 episodes per 100,000 population (Ko & Enns,2008).The majority of foreign objects ingestions occur in pediatrics population with a peak incidence between six months and six years of age while in adults true foreign object ingestion more commonly occurs among those patients with psychiatric disorders, mental retardation or impairment caused by alcohol and old age as reported by Lee et al (2007). In the general population, the most common ingested foreign bodies in children are coins but meat bone, marbles, safety pins, hair clips, batteries and screws are also reported while impacted meat or other types of food bolus, fish bone and dentures are common in adults (Lee et al.,2007; Pokharel et al.,2008; Haidary & Leider,2007)

Although most foreign objects are passed spontaneously, 10 to 20 % of these patients need treatment and approximately 1% will require surgery as reported by Lee et al (2007).Patients with esophageal foreign bodies require prompt diagnosis and therapy (Ekim, 2010).The common signs and symptoms in patient with a foreign body that has been retained for less than 24 hour tend to be gastrointestinal and include dysphasia, drooling, vomiting, gagging and anorexia. Major respiratory symptoms are more common weeks or months after ingestion, such as coughing, stridor, fever, chest pain wheezing, chronic upper respiratory tract infections, pneumonia and hemoptysis as reported by Chang, Chang & Wu(2009).

Posteroanterior, lateral cervical and chest radiographs are basic radiological methods of foreign body detection. since most foreign bodies are radiolucent, for non opaque objects, indirect findings such as larynx and tracheal deviation, as well as computerized tomography, can add in the diagnosis (Han et al ,2009; Elyas & Ahmad,2008).Rigid esophagoscopy under general anesthesia remains the effective and safe method of removal of

foreign bodies oesophagus as cited by Akhtar & Haq(2008).Endoscopic treatment is a reliable and safe procedure in skilled, expert hands with a high success rate and low morbidity and mortality as reported by Ko & Enns (2008). This study will determine the frequency, type and site of impaction and method of removal of esophageal foreign bodies amongst patients reporting with aero digestive tract foreign body.

Material and Methods

A cross sectional study conducted at the ENT Department, Ayub Medical Institute (AMI) from June 2011 to June 2012. Informed consent was obtained from all patients prior to surgery as a part of ethical practice. The inclusion criteria were patients of either sex above six months of age, with definite history of foreign body ingestion and/or radiographic finding of foreign body. An exclusion criterion was patients with vague history of foreign body ingestion, age below six months as foreign body ingestion is less likely and patients in which the foreign body was passed into stomach spontaneously before procedure.

Demographic information like name, age and gender were obtained. A detailed and careful history was taken with special emphasis on the onset, progression of symptoms and duration and nature of foreign body. A detailed ENT and systemic examination was carried out in every case. Baseline investigations like viral profile, Hb, Bleeding time and clotting time were done in all patients. Radiographs in anteroposterior and lateral view were taken. Before general anesthesia X-rays was repeated to confirm the foreign body. If it was passed through esophagus into stomach, patient was excluded from the study. Patients were prepared for general anesthesia, and Esophagoscopy was performed by experienced otolaryngologist/head and neck surgeon using rigid esophagoscopy and findings were recorded in the proforma. Patients were discharged next day if there was no complication, and followed up after one week. If patient was not fit for General anesthesia, foreign body was removed using Flexible endoscopy. If the foreign body was pushed down into stomach the case was excluded from the study. The type and site of foreign body removed was recorded. Data was collected by myself to exclude any bias and was stored and analyzed in SPSS version 11.

Results

A total of 100 patients were included in the study. The age of patients varied from 1 to 90 years with mean age was 14.60 ± 21.13 years. The most common age was 1 to 5 years (55%) as shown in Figure 1. There were 57 (57%) male patients while female patients were 43 (43%) in the study as shown in Figure 2. Among the 100 patients who presented with aerodigestive foreign bodies, 57 (57%) patients had foreign body in the esophagus. Among these 57 patients, the foreign body was lodged at the level of cricopharyngeal sphincter in 39 patients while below cricopharyngeal sphincter in 18 patients.

Among 100 patients, 43 (43%) patients had foreign body impaction at other sites (including oralcavity, pharynx and tracheobronchial tree as shown in Table 1. The average distance of foreign body impaction from upper incisor was 21.23± 5.69 cm as shown in Table 2. The most common type of foreign body esophagus was coin, 32 patients (56%) followed by other objects. (Figure 3) The most common method for removal of foreign body esophagus was rigid esophagoscopy in 48 (84%) patients while flexible in 8 (14%) patients. Only in 1 (2%) patient the foreign body was removed surgically. (Figure 4)

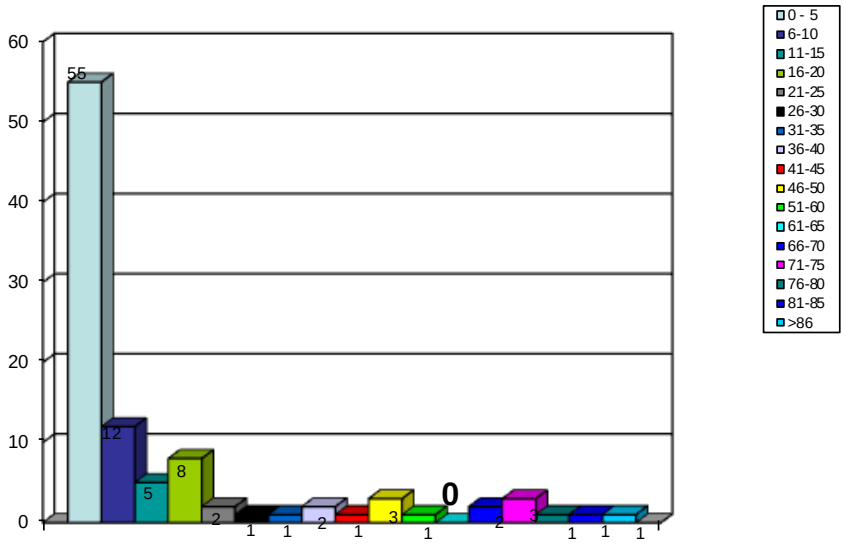

Figure 1: Distribution of patients by age (n=100)

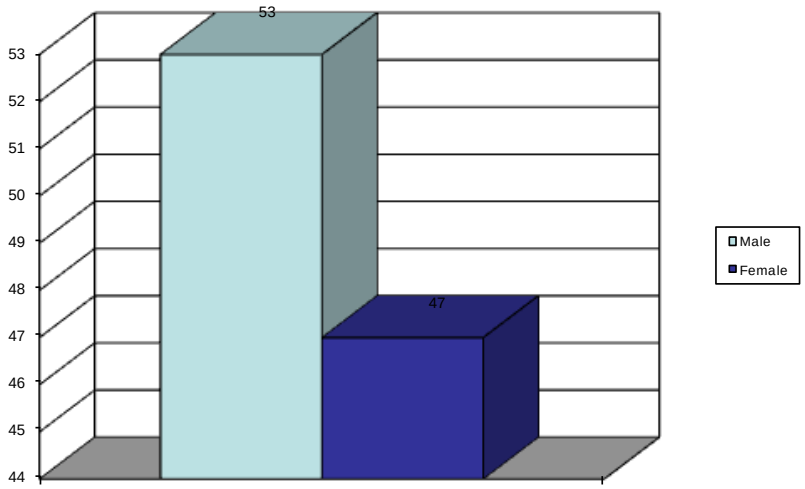

Figure 2: Distribution of patients by sex (n=100)

Anatomical Location	No.	Percentage
Esophagus	**57**	**57**
Cricopharangeal Sphincter	39	39
Below Cricopharangeal Sphincter	18	18
Others:	**43**	**43**
Oral Cavity	4	4
Pharynx	8	8
Tracheobronchial Tree	31	31

Table 1: Distribution of patients by Site of Impaction of Foreign body in aerodigestive tract (n=100)

	Mean	Standard Deviation
Distance from Incisors (cm)	21.23	5.69

Table 2: Distance in cm from incisors of impaction of foreign body

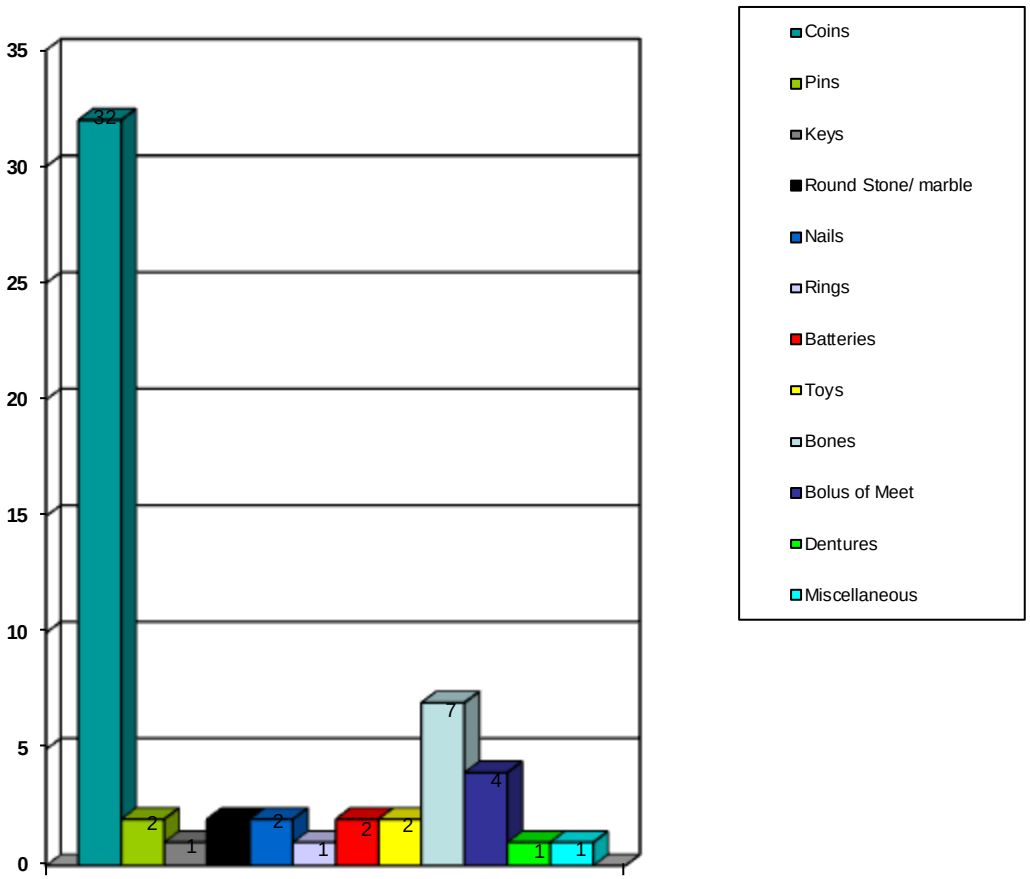

Figure 3 : Distribution of patients by type of Esophageal foreign body (n=57)

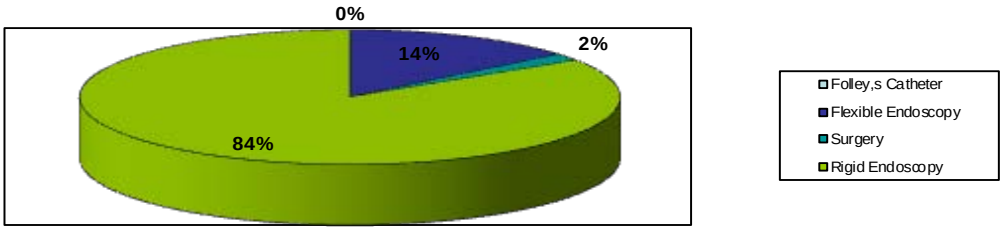

Figure 4: Distribution of patients by procedure of removal (n=57)

Discussion

Foreign body ingestion is a commonly encountered problem in both children and adults in emergency departments (Akhtar & haq,2008; Elyas & Ahmad,2008).After nose and ear ,the esophagus is the commonest site for foreign body impaction as reported by Akhtar & Haq (2008). Impaction of a foreign body in the esophagus causes edema of the mucosa, and the esophageal wall becomes weakened. Retention leads to perforation, which is only a matter of time. Therefore, all foreign bodies retained in the esophagus should be removed as soon as diagnosed (Weisberg & Refaely,2007; Naidoo&Reiddi,2004). Besides history and physical examination, radiological examination is a very important diagnostic tool to identify the foreign body and its location as cited by Athanassiadi et al (2002). Radiolucent objects will require direct visualization or contrast radiographs for location specification in the study conducted by Degghani &Ludemann(2008). Many alternative methods for removal of foreign bodies have been described in the literature, such as dislodgment by a Foley catheter, advancement with bougie, papain or carbonated fluid treatment, glucagon therapy, balloon extraction during fluoroscopy but rigid endoscopy remains the gold standard treatment as cited by Athanassiadi et al (2002).

Majority of the patients in our study who ingested the foreign bodies were children i.e. 55 which is consistent with other studies in the world. In a study by Hussain et al (2010), sixty percent of the patients in their study were of less than 10 years age. In a study by Saki N, et al (2007), it was observed that sixty five percent of patients were four years or less in age at the time of admission. The mean age of the patients in our study was 14.60 ± 21.13 years [range 1-90]. In a study by Gilyoma et al (2011;p2-5), it was observed that the ages ranged from 1 year to 63 years (mean 7.04 ± 14.62 years). Patients aged ten years and below were the majority and accounted for 88.8%. The results of the above studies suggest that majority of the patients with ingested foreign bodies in esophagus are children. This can be explained by the explorative nature of the children.

There were 57 % male and 43% female patients in our study and the female to male ration was 1:1.3. Similarly in other studies, these observations were not very different from other studies across the globe. Hussain et al (2010) observed that 63% were males and 38% were female patients in their study. In a study by Gilyoma et al (2011;p2-5), males outnumbered females by a ratio of 1.1:1. Similarly larger male population was observed in study by Iseh et al (2006), with 66.7% male and 33.3% female patients. Like our study, most of the studies confirm that foreign bodies are common among males.

In our study, the frequency of foreign body in esophagus was 57% while 43% at other sites. These findings were comparable to the study done by Gilyoma, et al (2011;p2-5) which showed that majority of the foreign bodies were in the esophagus i.e. 54 %. In a study by Little et al (2006) showed that most of the foreign bodies were lodged in the superior esophagus in 73%.

Different foreign bodies have been described in different studies. Iseh et al (2006) and Ekim (2010) observed that coin (65.3%) was the commonest foreign body occurring mainly in the paediatric age group followed by bones (17.3%) and meat bolus (8%) in adults. Meat bolus was the only impacted foreign body amongst the elderly patients aged between 70-90years. Gilyoma et al (2011;p2-5) and Hussain et al (2010), studied 212 patients with aerodigestive tract foreign bodies in a teaching hospital and observed that the commonest type of foreign bodies in airways was groundnuts (72.7%) and in esophagus was coins (72.7%). The trachea (52.2%) was the most common site of foreign body's lodgment in the airways. Coins 118(55.6%) were the most common foreign bodies followed by meat bolos 44(20.75%), dentures 15(7.07%), fish bone 15(7.07%), chicken bone 10(4.7%), battery cell, peach seeds artificial jewelry 2 each (0.94%), marble ball and bone chip 1 each (0.47%). Our results are also consistent with these studies with coin being the most common esophageal foreign body in pediatric age group.

In our study, rigid endoscopy was used in 84% patients followed by flexible endoscopy (14%) and surgery was performed only in 2% patients, and Foley's catheter was not used in our study. Hussain et al (2010) documented that foreign body were removed spontaneously in 4.08% patients, and rigid endoscopy with forceps removal under general anesthesia was the main treatment modality performed in 87.8% of patients while in the study of Gilyoma et al (2011;p2-5) and Ekim (2010) the foreign bodies were successfully removed without complications in 90.8% of cases. Saki et al (2007) reported foreign body esophagus in 240 patients and endoscopic treatment was offered in 93.2 % patients and surgery in 8.3% patients. So, like our study, the mainstay of the treatment in most of the studies is rigid

endoscopy. Although the overall incidence of gastrointestinal perforation due to foreign body ingestion is less than 1%, sharp and pointed objects result in perforation rates up to 35 % as reported by Bounds (2006). In our study no esophageal perforation was reported.

Conclusion

This study demonstrates that rigid esophagoscopy remains as an easy and safe method for esophageal foreign body removal in trained hands. In symptomatic patients, timely diagnosis and endoscopic removal should be performed early to prevent serious life threatening complications.

References:

Akhtar M, Haq MI. (2008). Management of oesophageal foreign bodies.*Professional Med J.* 12 (3), p308-311.

Han S, Kayhan B, Dural K, Kocer B, Sakinci U. (2009). A new and safe technique for removing cervical esophageal foreign body. Turk J Gastroenterol. 16(2), p108-110.

Lee TH, Kang YW, Kim HJ, Kim SM, Im EH, Huh KC, et al. (2007). Foreign objects in korean prisoners. Korean. Int Med J. 22, p275-278.

Ko HH, Enns R. (2008). Review of food bolus management. Can J Gastroenterol. 22, p805-807.

Pokharel R, Adhikari P, Bhusal CL, Guragain RPS. (2008). Oesophageal foreign bodies in children. J Nepal med Assoc. 47(172), p186-188.

Haidary A, Leider J S, Silbergleit R. (2007). Unsuspected swallowing of a partial denture. Am J Neuroradiol. 28, p1734-1735.

Elyas S, Ahmad ME. (2008). Surgical removal of perfume stopper impacted in the pharynx. Khartoum J Med. 01, p93-94.

Ekim H. (2010). Management of esophageal foreign bodies: A report on 26 patients and literature review. Eastern J Med. 15, p21-25.

Chang MY, Chang ML, Wu CT. (2009). Esophageal perforation caused by fish vertebra ingestion in a seven month old infant demanded surgical intervention: A case report. World J Gastroenterol. 12(44), p7213-7215.

Weisberg D, Refaely Y. (2007). Foreign bodies in the esophagus. Ann Thorac Surg. 84, p1854-1857.

Naidoo RR, Reddi AA. (2004). Chronic retained foreign bodies in the esophagus. Ann Thorac Surg. 77, p2218-2220.

Athanassiadi K, Gerazounis M, Metaxas E, Kalantzi N. (2002). Management of esophageal foreign bodies: a retrospective review of 400 cases. Eur J Cardio-Thorac Surg. 21, p653-656.

Degghani N, Ludemann JP. (2008). Ingested foreign bodies in children: BC Children Hospital Emergency Room Protocol. BC Med J. 50, p257-262.

Hussain G, Iqbal M, Ihsanulla, Hussain M, Ali S. (2010). Esophageal foreign bodies: an experience with rigid esophagoscop. Gomal J Med Sci. 8,

p 218-220.
Saki N, Nikakhlagh S, Safai F, Peyvasteh M. (2007). Esophageal foreign bodies in children. Pak J Med Sci. 23, p854-856.
Gilyoma JM, T, Chalya PL. (2011). Endoscopic procedures for removal of foreign bodies of the aerodigestive tract: The Bugando Medical Centre experience. BMC, Ear, Nose and Throat Disorders.11, p2-5.
Iseh KR, Oyedepo OB, Aliyu D. (2006). Pharyngo-oesophageal Foreign Bodies: Implications for Health Care Services in Nigeria. Annals of African Medicine. 5, p52-55.
Little DC, Shah SR, St Peter SD, Calkins CM, Morrow SE, Murphy JP. (2006). Esophageal foreign bodies in the pediatric population: our first 500 cases. J Pediatr Surg. 41, p914-918.
Bounds BC. (2006). Endoscopic retrieval devices. Technique in Gastrointestinal Endoscopy. 8, p16-21.