

ORIGINAL ARTICLE

FOREIGN BODIES IN THE EAR, NOSE AND ESOPHOGUS IN PEDIATRIC AGE GROUP, AT MEKELLE HOSPITAL ETHIOPIA.

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ABSTRACT

Background: The ingestion of foreign body is a common problem in children, some of which may cause damage or may be associated with toxicity.

Objective: To evaluate and analyze the pattern of foreign bodies in children in the esophagus, ears and nose with review of the techniques for removal in the emergency department.

Methods: From Sept 1, 2008 to May 30, 2010, a review of all children with foreign bodies in the esophagus, ears and in the nose was done to assess the patterns and treatment outcomes. The source and the study group were (N=72). Data concerning socio- demographics, characterization, presenting symptoms and signs, techniques of retrieval and outcomes were extracted and filled in a previously prepared protocol sheet. Descriptive analysis was done using SPSS- computer statistical software.

Results: During the study period, 72 children, victims of foreign bodies in the esophagus, ears and in the nose were included in the study. Of these 44(61.1%), 28 (38.9%) were male and female children, respectively. The age ranged from 11 months to 14 years with (mean= 4years).The most affected age group was between 0-5 years accounting for 46(63.9%) followed by the age group between 6-10 years accounting for 20 (27.8%) of all cases. Males 44 (61.1%) were predominantly most affected than females 28 (38.8%). The location of foreign bodies in this study were in the ears 45 (62.5%), esophagus 17(23.6%) and in the nose 10 (13.9%) in order of their frequency. Swallowed foreign bodies were successfully removed by Magill forceps. Foreign bodies in the ears and in the nose were removed by careful but different techniques depending on the type and the clinical condition of the patient at time of intervention.

Conclusion: Our study revealed a higher number of patients with foreign bodies in the ears and in the esophagus. Only a small number of patients presented with FBS in the nose. Food items in the ears, in the nose and coins in the esophagus were items frequently observed. Early suspicion, early diagnosis and prompt intervention have attributed to reduce morbidities of major events.

Keywords, Foreign bodies, Ear, Nose, Esophogus, Mekelle, Ethiopia

INTRODUCTION

As children explore and interact with the world, they will inevitably put foreign bodies in their mouth and swallow some of them (1-4). The ingestion of foreign body is most commonly a problem in young children aged 6 month to 5 years (4,5), but can affect children of all ages. These younger than 6 months can occasionally ingest materials with the aid of older siblings during play. It may be an event witnessed by parents.

It occurs much less frequently in older children and adults but does affect these groups rarely. It usually occurs accidentally but can result from deliberate ingestion (5, 6).

Virtually any object small enough to pass through the pharynx may be swallowed. Items commonly ingested by children include, coins, toy parts, pencils, pens and their tops, small hair pins and chicken bones, which are mainly radio opaque. Food related items such as fish and chicken bones are more often ingested by older children (4-6). The majority of ingested foreign bodies will pass safely through the gut and passed

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with feces, those that reach the stomach have an 80-90% chance of passage (7,8). Swallowing foreign bodies are usually asymptomatic but some will cause damage to the GIT and or become lodged (1-8) and these items associated with toxicity must be identified and removed (6-9).

Most complications of pediatric foreign body ingestion are due to esophageal impaction, usually at one of the three (1 of 3) typical locations. The most common site of esophageal impaction is at the thoracic inlet. Defined as the area between clavicles on chest radiograph, this is the site of anatomical change from the skeletal muscle to the smooth muscles of esophagus. The crico pharyngeus sling at C6 is also at this level and may catch a foreign body. About (70%) of blunt foreign bodies that lodged in the esophagus do so at this location (7, 8). Another (15.0%) become lodged at the mid esophagus, in the region where the aortic and carina overlap the esophagus on chest radiograph. The remaining (15.0%) become lodged at the lower esophageal sphincter (LES) at the gastro esophageal junction (4-7). If a child with no known esophageal pathology has a blunt foreign body lodged at a locations other than the three typical location described above, the possibility of a previously unknown esophageal abnormality should be considered (5-9).

Pointed objects may become impacted and, therefore, lodged anywhere in the esophagus .Small objects, such as pills, smaller button batteries, may adhere to the slightly moist esophageal mucosa at any point (7, 8). The epidemiological aspect, it is difficult to estimate the incidence of accidental ingestion of foreign bodies in children, but it is common. Foreign bodies in the ears and nose frequently occur in children. It is important for parents to be aware that children may cause themselves or other children greater harm by placing objects into the ears and or nose. This clinical condition is common in young children especially under the age of 5 years and common items such as rocks, seeds, beads, dried beans; tiny button, shaped batteries, insects and food products are amongst (10-18).

Symptoms related to foreign bodies in the ears include discomfort, pain, difficulty of hearing and discharges and symptoms of foreign body in the nose are nasal drainage which appear the side of the nose with the object and often has a bad odor. In some cases, the child may also have a bloody nose, pain and irritability (13-19).

MATERIALS AND METHODS

To determine the pattern of foreign bodies, a retrospective review of children with foreign bodies in the ear, nose and in the esophagus was done from September 1, 2008 to May 30, 2010. The source and the study group were (N-72). Case notes whose clinical evaluation conforming FBS were included in the study. Adequate records have been maintained in Mekelle Hospital in all patients with FBS and these records were retrieved from the register and medical record office. Data concerning socio-demographic, characterization, presenting symptoms and signs, technique of retrieval and outcomes were extracted and filled in a previously prepared protocol sheet. It was then analyzed using SPSS—computer statistical software. The difference in proportions were examined using statistical significance ($P < 0.05$).

RESULTS

During the study period, 72 children victims of foreign body in the esophagus, ears and in the nose were included in the study. Of these 44 (61.1%) and 28 (38.9%) were male and female children respectively. The male to female ratio was (M: F; 1.7:1), (Table 1). The age ranged from 11 months to 14 years, mean age was 4 years. Most 46(63.9%) cases of foreign body victims occurred in the 0-5 year age group (Table 1).The other age group commonly affected was between 6-10 years accounting for (27.8 %) of all cases. Males 44(61.1%) were predominantly affected than females 28(38.8%). Likewise males were exclusively affected in the age group between 11-14 years (Table 1).

In this series, the most common location of foreign bodies in victim children was in the ears accounting for 45(62.5%) followed by foreign body in the esophagus accounting for 17(23.6%) and the least observed insertion FBS was in the nose accounting for 10(13.9%), (Table 2).

Table1. Age and sex distribution of foreign bodies in the ear, nose and throat, Mekelle, Ethiopia, (2008-2010)

Age in years	Sex		Total	(%)
	M	F		
0-5	25	21	46	(63.9%)
6-10	13	7	20	(27.8%)
11-14	6	0	6	(9.7%)
Total (%)	44(61.1%)	28(38.8 %)	72(100.0%)	(100.0%)

The type of items and frequency of foreign bodies, commonly in the ears were fruits, food items and rocks (stones) accounting for about (50.0%) all the types of foreign bodies. Most swallowed items were coins accounting for (88.2%) of the total ingested foreign bodies; two patients were cases of ingestion of chicken bones. Items in the nose were beads, beans, food item and peas (Table 3). Children with foreign body in the esophagus, in the ears and in the nose tend to have a less clear cut presentation, although these may have been witnessed the event, majority were symptomatic and all required intervention (Table 4), but management was determined by the item types or properties, clinical condition and location of the foreign bodies.

Table2: Frequency of foreign bodies by location, Mekelle, Ethiopia, (2008-2010).

Location	Frequency (No	
	of patients)	Total (%)
Ear	45	(62.5%)
Esophagus	17	(23.6%)
Nose	10	(13.9%)
Total	72	(100.0%)

Table 3: Distribution of common foreign bodies by item type, Mekelle, Ethiopia, (2008- 2010).

Items	Frequency (Number)	Total (%)
Coins	15	
swallowed bones	2	(23.6%)
Fruit pieces	16	(22.2%)
Food items	13	(18.1%)
Rocks(stone)	8	(11.1%)
Beads	4	(5.6%)
Peas	3	(4.2%)
Beans	3	(4.2%)

Most 12 (70.0%) foreign bodies in the esophagus were found in the cricopharyngeus or upper esophagus, two cases of the swallowed coins were at the level of mid esophagus for which Foley catheter retrieval was initially done, brought up wards and removal by Magill forceps was successfully achieved. In one child the swallowed coin began to migrate distally and might have passed into the stomach. However, in two patients, the swallowed foreign

bodies were stacked chicken bones in the esophagus which required removal by open surgery and retrieval of ingested foreign bodies from the esophagus were all done under general anesthesia. Foreign bodies in the ears and nose were removed by careful but different techniques depending on the type and the clinical condition at time of intervention and all were successfully eliminated using Agraff, malleable wires, artery forceps and irrigation for foreign bodies in ears.

Table 4: Symptoms of foreign bodies at presentation by location, Mekelle, Ethiopia, (2008-2010)

Location	Symptom at presentation
Ears	Pain, Difficulty of hearing, discomfort
Esophagus	Ear discharge Gagging vomiting retching
Nose	Neck and throat pain Nasal discharge Clear Offensive Nasal block Pain and irritation(tearing)

DISCUSSIONS

Infants and young children are naturally curious about their environment. It is this childhood inclination for exploration that results in the serious problems of insertion and ingestion of FBS (1-4). Studies are scarce on the general pattern of FB ingestion and insertion in Ethiopia. In this study FB victims most commonly occurred in children younger than 5 years at a rate of 63.9%. Studies carried out in various parts of the western World noted more than 70.0 % of FB cases involved a childhood younger than 6 years a similar result to our study (1-4).

In this series, the most common location of FBS in victim children was insertion in the ears and ingestion in the esophagus at a rate of 62.5% and 23.6% respectively. A relatively low rate (13.9%) of FBS in the nose was observed this series. Coins and smooth blunt objects are the frequent ingested FB items in various similar reports (1-4). There is a well-documented cultural and geographic difference in the type of FBS ingested and inserted (1). Review reports in Chinese children came up that about 42% of their cases ingested fish bones and only 39% has ingested coins (1, 9). In another western study from Belgium, only 27.0% were found to have ingested coins (1). In this series, majority of the swallowed items were coins (88.2%), a variation to the above

reports. In our study, the type and frequency of FBS were food items, fruit pieces and rocks (stones) accounting for about 50.0%. Food items compose 50.0% to 80.0% of FBS removed by endoscopy from children's aero digestive tract, a report from earlier similar studies (1-8) which is consistent with our series.

Management was determined by the item type and property. FBS lodge at its upper part of the esophagus, the narrowest portion in the cricopharyngeus muscle. Retention of swallowed FBS at this level accounts for 63.8% in literature (1-9). In this study, 70.0% of FBS were found at the level of the upper esophagus which is consistent to previous similar studies.

There are no studies in Ethiopia describing the clinical presentation of children with FB insertion and ingestion. The presentation in this series was highly variable and depended on different clinical scenarios. In children, the event may have been witnessed, reported by the child or be suspected and discovered subsequently when a child becomes ill. Gagging, retching and neck pain or esophageal pain were most common presentations in children with esophageal FBS in this series which correlates to previous similar reports (1-4,18,19). Early diagnosis with radiologic imaging was helpful in radio opaque swallowed FB to confirm or refute possibilities of esophageal entrapment. Upper GI endoscopy was not

yet a practice in the study area during the study period and diagnosis was entirely dependent on careful clinical evaluation and radiologic imaging.

In this series, the management indications of instability that needed urgent measure were air way compromise, drooling, inability to swallow fluids. Those with objects lodged in the esophagus required some form of intervention to prevent complications. The three common techniques for FB removal from the esophagus are Foley catheter extraction, bougienage to push the FB in to the stomach and endoscopic retrieval (1-4). In this study, the choices of technique for retrieval of swallowed FB were by Magill forceps and Foley catheter which were generally easy and successful. As whole, prognosis was good and majority of the children with FB victims suffered no significant sequelae, however minority of the cases had complications given that this is a relatively common phenomenon (2-8). Previous studies have shown that patients presenting with insertion of FBS in the ears or in the nose are predominantly children in their 2-8 years age (9-30). In this study group, children commonly affected were between 2 ½ to 7 years of age which is consistent to the above report.

Our study has depicted a higher number of FBS in the ears (62.5%) and only 13.9% of children were cases of FBS in the nose. Majority of FBS in the nose and nasal cavity were not serious which occurred in toddlers and children of 9 months to 7 years of age in the study area. Children develop the ability to pick up objects at about this age, so foreign objects in the nose are less common in children younger than 9 months (22, 24-87, 30) which correlates to this study.

Dry food expand when they become moist and seeds such as beans, peas or pop corn can swell from the moistures of the ear canal making them harder to remove (19,20). In this series for beans, peas and other dry food expanded and difficulty in retrieval was encountered, an experience similar to earlier studies (19, 20, 24 -28). The longer an object is left in the ears, the more difficult it is to remove. Also the longer an object stays in the ear, the higher the chances of complication (19-33).

On initial inspection, cases of FBS were seized and removed with forceps before the child was aware of the result while this was true, unsuccessful attempt significantly jeopardized subsequent effort. The first attempt is likely to be the most successful (19,20), as repeated tries was found not only caused further damage but also compromised patient cooperation

and careful approach was essentially important (19, 20).

Anesthesia before removal was likely to facilitate efficient retrieval. For many reasons of little effects of local anesthesia, a general anesthetic was preferred where the patient was uncooperative or removal of FB proved to be difficult in the ears and/or in the nose in this series. After successful retrieval routine inspection of the ears or nose was the practice to ensure no other FB was present. It is also prudent to check the contra lateral orifice especially in the pediatric population (19-33).

Many surgical instruments have been designed or adopted to assist in the process of removal of FBS. In this series, the choice of instrument depended on the type, location and composition of the FB items. Alligator or other forceps were required for irregular objects with an easy visible edge, hooks, curettes and wire loops were required when the item was smooth or spherical and impossible to grasp. A number of instruments manufactured from various piece of equipment have been described in literature, the paper clip seems a popular item from which is fashioned a wire loop or hook to assist in retrieval of FBS in the ear and in the nose (22-27,29), a technique frequently practiced in this study group.

Prior to the 19th century, the mortality rate associated with FBS in the aero digestive tract was at a higher rate (24.0%). Owing in the large part to the work of Chevalier Jackson, the mortality rate has been reduced to a lower rate (2.0%) by equipment that made endoscopic removal safe and successful (1-4). Morbidities observed in this series were very low, minor bleeding and tissue laceration and abrasions were amongst, otherwise no major event was encountered. Little is reported from Ethiopia and comparison was not possible.

In conclusion, our study revealed a higher number of FBS in the ears and in the esophagus. Only a small number of patients presented with FBS in the nose. Food items in the ears and in the nose and coins in the esophagus were victim items frequently retrieved. Majority of swallowed FBS in the upper part of the esophagus were retrieved by Magill forceps successfully, although endoscopic elimination was the preferred option. Elimination of FBS in the ears and in the nose was performed by locally available equipment with minimum morbidities. Early suspicion, early diagnosis and prompt intervention have contributed to reducing morbidities of major events.

ACKNOWLEDGEMENTS

I am very grateful to all who took part in the surgical care delivery of the patients. My gratitude goes to Mekelle Hospital management for allowing me to use the case notes.

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