Clinical Audit of Pharyngoesophageal Foreign Bodies

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ABSTRACT

Background: Pharyngo-oesophageal foreign body (FB) can occur across all age groups but is most common in children. They can lead to significant morbidity and mortality. **Method:** A retrospective review of the clinical record of all patients with pharyngo-oesophageal FBs who presented at the University of Maiduguri Teaching Hospital (UMTH) between 1st January 2013 to 31st December 2022 was carried out. Data on demographics, clinical histories, examination findings, investigations and interventions were extracted. **Results**: The age range spanned from 6 months to 74 years with a male-to-female ratio of 2.1:1. Pharyngo-oesophageal FB were commonly seen in children 9 years and below (52.2%), with 33 (63.5%) of these patients aged 3 years and younger. The most common symptoms were dysphagia, odynophagia, foreign body sensation, and drooling of saliva. The commonest site of FB entrapment is the cricopharyngeal area (49%), followed by the oesophagus 34.4%, and the least common site was the hypopharynx (3.1%). In 4 (4.2%) no FB was detected. Meat/fish bones (26%) were the most common FBs, followed by denture 17 (17.1%), metallic objects 13 (13.5%), beads 8 (8.3%), and disc batteries 7 (7.3%). Of the 92 retrieved FBs, 63 (68.5%) were inorganic materials and 29 (31.5%) were organic materials. The FBs were removed endoscopically. No mortality was recorded but 4.2% of the patients sustained mucosal laceration due to impacted dentures which was managed conservatively. **Conclusion:** Pharyngo-oesophageal FBs are common medical emergencies that are more frequently seen in children and has significant risk of morbidity and mortality, Early diagnosis and retrieval is essential for the prevention complications associated with delayed presentation.

Key words: Pharyngo-oesophageal, foreign body, endoscopy, ingestion

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Introduction

Foreign body (FB) ingestion is a well-documented phenomenon in paediatric population, but in adults, it is primarily seen in psychiatric patients, prisoners, alcoholics, and those with intellectual disabilities.[1,2,3] The incidence of FB ingestion in children aged 0–14 years in the European Union is approximately 50,000 per year, and up to 10% being fatal.[4] While most ingested foreign bodies pass through the gastrointestinal tract uneventfully, a few may get impacted causing serious complications.[5,6] In the United States, over 100,000 cases of foreign body ingestion are reported annually, with more than 85% occurring in children.[7,8] especially those between six months and three years, leading to approximately 1,500 – 2,750 deaths per year.[9,10] Kirfi et al reported a prevalence of 0.61%, with an average annual incidence of 0.13% in a hospital in Northern Nigeria.[11] Toddlers are particularly susceptible to FB ingestion due to their lack of molars for proper grinding, poor coordination of swallowing, and a natural tendency to explore the environment by placing objects in the mouth, and they often run or play while feeding.[12] In children, 98% of foreign body ingestion are accidental and involve common objects such as coins, toys, jewelry, magnets,

safety pins, and batteries,[13] while in adults the most common FB ingested are food boluses with an estimated prevalence of 13 per 100,000 population.[14] Several serious and sometimes fatal complications are associated with impacted pharyngoesophageal foreign bodies which may result from late diagnosis, late referral to the hospital, or mismanagement of the patient.[15] Common complications include mucosal ulceration, oesophageal obstruction or perforation, post-operative pyrexia, abscess formation, pneumonia, cardiac arrest, intrinsic stenosis, esophageal diverticulum, and even death.[16-19] Rigid-endoscopic retrieval performed under conditions of maximum safety and minimal trauma remains the best modality of treatment for FB ingestion.[17,18] Pharyngoesopgagal FB is a common emergency affecting children especially those 5 years and below. It can be associated with significant morbidity and even mortality if they are not promptly diagnosed and removed. Despite the significant cases of FBs seen, there is paucity of literature documenting such in the University of Maiduguri Teaching Hospital This study aims to review the management of pharyngo-oesophageal FBs at the UMTH.

Methods

This is a 10-year retrospective review of all patients presenting at the department of ENT Surgery UMTH with pharyngo-oesophageal FB between 1st January 2013 and 31st December 2022. Ethical approval was obtained from the Research and Ethics Committee of the UMTH. The case files of patients diagnosed with pharyngo-oesophageal foreign bodies were reviewed for demographics, clinical histories, examination findings, investigations and interventions. The data were analysed using simple descriptive statistics.

Results

A total of 96 patients with pharyngo-oesophageal FB were seen during the study period. Sixty-five (67.7%) were males, and 31 (32.3%) were females with a male-to-female ratio of 2.1:1. Their ages ranged from 6 months to 74 years, with a mean age of 18.7 ±19.9 year. The age of majority (52.2%) of the patients ranged from 0-9 years, of these, 33 (63.5%) are aged 3 years and younger, Table 1.

Most patients (61.2%) with pharyngo-oesophageal FB presented within the first 24 hours of FB ingestion, 34.4% within 1-7 days and only 4.2% were seen after 7 days of ingestion. All our patients were symptomatic, most having more than one symptom, most common symptoms including dysphagia 60 (62.5 %), odynophagia 40 (41.7%), foreign body sensation 20 (21.73 %), and drooling of saliva 14 (14.6 %).

The commonest site of FB entrapment in this study was the cricopharyngeal sphincter (49%), followed by the oesophagus (34.4%) and the hypopharynx (3.1%). In 4.2% of cases, no FB was seen (Table 2). Meat/fish bones (26%) are the most impacted FB in this study, followed by denture 17 (17.1%), metallic FB 13 (13.5%), beads 8 (8.3%), and disc batteries 7 (7.3%). Of the 92 foreign objects retrieved, 68.5% were inorganic materials and 31.5%) were organic. No FB was seen in 4 (4.2%) of the cases on endoscopy (Table 3).

The most common mode of retrieval of the FB was by rigid oesophagoscopy (83.4%), followed by oropharyngoscopy (10.4%) and hypopharyngoscopy (3.1%). No mortality was recorded in this series, but 4.2% of the patients sustained mucosal laceration due to impacted dentures which was managed conservatively.

Table 1: Age and sex distribution of the patients

AGE (Years)	SEX		Total N (%)
	Male	Female	
0-9	38	14	52 (54.2%)
10-19	4	1	5 (5.2%)
20-29	7	2	9 (9.4%)
30-39	7	5	12(12.5%)
40-49	4	4	8 (8.3%)
50-59	3	4	7 (7.3%)
60-69	2	0	2 (2.1%)
70-79	0	1	1(1.0%)
Total	**65 (67.7%)**	**31(32.3%)**	**96 (100%)**

Table 2: Sites of foreign body impaction

Site of impaction	Frequency	Percentage (%)
Oropharynx	11	11.5
Hypopharynx	3	3.1
Cricopharyngeal area	47	49
Oesophagus	33	34.4
No FB	4	4.2
Total	96	100

Table 3: Nature of foreign body removed

Nature of foreign body	Frequency	Percentage (%)
Fish/meat bone	26	27.1
Denture	17	17.7
Bottle cap	2	2.1
Needles/pins	5	5.2
Coins	3	3.1
Beads	8	8.3
Metallic FB	13	13.5
Plant seed	3	3.1
Button	4	4.2
Disc battery	7	7.3
Plastic	4	4.2
Not seen	4	4.2
Total	96	100.0

Discussion

Foreign body ingestion is one of the public health issues with high frequency, especially in children who are by nature curious and exploratory. Foreign materials retained in the esophagus generally fall into two categories: organic and inorganic FB. Children most often ingest inorganic FB like coins, beads, and toys, whereas adults commonly tend to have problems with organic FB like meat and fish bones.[11,15,22,23] In this study, like similar other studies, the age group that most commonly presented with pharyngo-oesophageal FB is the age range of 0-9 years[11,15,19 20] majority of whom are 3 years and below. Reports from the United States indicated that > 85% of FB ingestion occurs in children with a peak age of 6 months to 3 years.[7,8,9] In a similar study by Iseh et al.14 68% of their patients are aged 0-10 years, with a majority (53.3%) of them aged 0-5 years. This high incidence in children is usually attributed to their natural predisposition to explore their surroundings by putting things in their mouth, inability to masticate well, poor control of deglutition as well as their tendency to cry, laugh, and run around while eating. Most of the non-organic foreign bodies are encountered in this age group. A second peak was observed in the age group 30-39 years in this study similar to the report by Iseh et al.15 In contrast, other studies reported their second peak age group between 70-79 years which was higher than what we reported. , This may be explained by the high rate of fish/meat bones impaction recorded in this study which are sharp foreign bodies that can easily get impacted without necessarily having a background anatomic abnormality.

Pharyngo-oesophageal FBs are predominantly seen in males in this study with a male-to-female ratio of 2.1:1 which agrees with reports from similar studies.[1,11,15,18,23] In contrast to this, several other authors reported no significant gender difference in their studies..23,24,25 The high male preponderance may be attributed to the hyperactivity of the male child compared to female.

The majority of the patients in this study presented within the first 24 hours of the FB ingestion, this was similarly reported in other studies[11,26] A good number of the patients presented within 1-7 days, only 4.2% presented after 7 days of the incident. Comparably, Gilyoma and Chalya reported that 63 of their patients presented to the hospital within 24 hours, 20 presented between 1 and 7 days, while 15 presented after 7 days of the FB ingestion.[27] Amutta et al.[27] also reported that 81.8% of patients with FB ingestion presented within 1 week while 18.2% presented after 1 week of the ingestion. However, Iseh et al.[15] reported that the duration of impaction of pharyngo-oesophageal FB before presentation ranged from a few hours to 7 years. Reasons that could be attributed to this delayed presentation may include poverty, a long distance from the hospital facility, wrong diagnosis, delayed referral from a peripheral hospital as well as mild symptomatology. Early presentations are most seen in younger children and when there are more serious symptoms like respiratory distress, dysphagia, and stridor.[27,28]

The clinical presentation of pharyngo-oesophageal foreign body is highly variable; patients may be asymptomatic or have complete obstruction with drooling. Patients typically present with dysphagia, odynophagia, foreign body sensation, drooling, spitting, vomiting, or even secondary airway compromise from foreign body impingement. All our patients were symptomatic as reported by Kirfi et al.[11,30] in contrast, several other studies reported varying percentages of asymptomatic presentations.[4,29,31] The symptomatology of patients with FB ingestion in this study agrees with that reported by Kirfi et al,[11] Majori et al,[17] and Onotai and Ibekwe.[1] Longstanding foreign bodies may cause failure to thrive or recurrent aspiration pneumonia or even oesophageal perforation.[10,32] Diaconescu et al, reported that clinical symptoms are significantly determined by the shape of the FB, the age of the patient as well as the time between the ingestion and the presentation.[33]

In this study, the majority of FB were impacted in the oesophagus (83.4%), and mostly in the cricopharyngeal region (49%). This is comparable to reports from other studies.[1,11,33,29] Deshmukh reported that up to 62.1% of FB impaction is in the cricopharynx, 23.9% in the oesophagus, and 6.8% each for the oropharynx and the hypopharynx.[34] The cricopharynx marks the area of the upper oesophageal sphincter, it is the narrowest part of the oesophagus, and hence, it is not surprising that FB commonly gets impacted in this region.

In this study, fish/meat bones constituted the bulk of pharyngo-oesophageal FBs encountered, followed by impacted dentures. Similarly, Damghani et al.[35] Murthy et al.[20], and Hsing-Chang et al.[5] all reported that bones are the most common FB seen in their

studies constituting 37.4%, 30%, and 37.8% respectively. This is at par with the report by several investigators[15,23,29] who recorded that coins are the most commonly encountered FB. Earlier studies in Nigeria by Iseh et al[15], and Alabi et al.[23] also reported that coins were the most encountered FB in their studies. In this study, coins constituted only 3.1% of all FBs encountered similar to the report by Kirfi et al.[16] which is a reflection of the current situation in Nigeria, where coins are barely used for transactions and thus not easily accessible to children. Denture was the second most common FB encountered in this series and is usually seen in adult similar to report by Kirfi et al.[16] However, Adeoye et al.[24] Salisu reported that dentures are the commonest FBs encountered in their series. This may be explained by the increasing awareness of the cosmetic use of dentures, its inappropriate use as well as the improper fixture of dentures. The large size of the denture and the non-expandable nature of the laryngotracheal cartilaginous wall makes the pharyngo-oesophageal lumen more at risk of denture impaction compared to the laryngotracheal lumen[24]. Metallic FBs like screw, spring, ear rings etc. constituted 13.5% of FBs in this study. Kirfi et al.[11] reported the commonest FB encountered in their study to be metallic FBs. In contrast however, other studies reported coins, vegetative FB, toys, peanuts among the commonest FBs encountered.[15,23,28]

Rigid endoscopy (oropharyngoscopy, hypopharyngoscopy and oesophagoscopy) with foreign body forceps removal under general anaesthesia was the treatment modality employed in this study. This conforms with reports from similar studies.[23,29,37] Rigid endoscopy may be accompanied with complications such as perforations, bleeding, cardiac arrest, laryngeal oedema, post-operative pyrexia, mediastinitis, mucosal laceration and even death.11,24,26 Only 4 (4.2%) patients in this study had mucosal laceration which was seen exclusively in those with denture impaction. Kirfi et al.[16] reported a complication rate of 6.38%, 50% of which was from the impacted denture. Several studies recorded a complication rate ranging from 2-14%.11,26,28,39 However, Iseh et al.[15] and Al-Qudah et al. reported no complications in their studies. Several reports attributed the development of major complications to the duration of the FB and advancing age.[11,26], In addition, Loh et al. stated that a total white cell counts of greater than 11.000/mm3 was associated with 5.7 times greater risk of developing a major complication.[44]

Conclusion

Pharyngo-oesophageal FBs is still a common phenomenon especially in the children. Early diagnosis and prompt treatment is essential to avoid complications which is usually associated with late presentation. Endoscopic removal is the procedure of choice but require skilled manpower and equipment mostly limited to tertiary institutions in Nigeria

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