

Foreign Bodies in the Upper Aerodigestive Tract of Nigerian Children

Abstract

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Aim/Background

This is an audit of number, nature, sites of impaction and methods of removals and treatment outcome of upper aero-digestive foreign bodies among children in an urban University hospital in Nigeria.

Patients and Methods

This is an 8year retrospective review of foreign body in upper aero-digestive tract of children (January 2001 to December 2007) was conducted at the ENT department of the University of Ilorin Teaching Hospital, Ilorin, Nigeria . Case notes of the patients were retrieved and the following were data extracted: demographic, clinical, operative and outpatient visits outcome.

Results

81 children aged 9months to 16years were seen (mean 4.28, SD 2.95) with 49 males and 32 females and a male: female ratio of 1.5: 1.0. The commonest age group was 9months to 4years (76.5%). Most common of impaction sites were nasal cavity in 31 cases (38.3%), oesophagus in 23 cases (28.4%), oropharynx in 16 (19.8%) and larynx in 6 (7.4%). The commonest FBs was coins in 33 (40.7%) in the oesophagus and 37.5% of pharyngeal FBs . Inanimate FBs in the nose constituted 31(38.3%) [Non vegetative 27(87.1%), vegetative 4(12.9 %)]. Fish bones were seen in 11 cases (13.6%) [6 in the larynx and 5 around the tonsillar fauces] and miscellaneous objects in 6 cases.

Conclusion

Upper aero-digestive foreign bodies are common especially among the under fours', commonest sites being the nose and pharyngo-oesophageal region with coins and inanimate FBs constituting about four-fifth. There is the need for parental health education on object placements, and a high index of suspicion among practitioners to facilitate early referral and avoid preventable complications.

Key Words : Upper aero-digestive, children, inanimate, coins, nose, Oesophagus

Introduction

A foreign body (FB) is an endogenous or exogenous substance incompatible with the anatomy of the part of the body where it is found. Although lodgment of a foreign body in the aerodigestive tract is a common accident that most ENT surgeons have to deal with, resulting in morbidity and mortality if urgent actions are not taken.¹ Children are inquisitive with tendencies to explore their body orifices. In the process they put the FB into the body orifices leading to subsequent swallow or inhalation. Children who are left alone and allowed to feed and possibly talk at the same time are also predisposed. The peak age of occurrence is six months to four years.²

In 2005, the American Poison Control Centres reported nearly 111,000 cases of ingested FB by individuals below 19years³ Conner et al in a home

based survey of 1500 children reported 4% of the children have swallowed a coin as the commonest ingested foreign body.⁴ Studies in Nigeria by Okafor², Okeowo⁵, and Obiakor⁶ at different centres reported varied patterns.

The most commonly ingested foreign bodies are coins, screws, buttons and toys.^{2,5}

In the USA Roberts et al reported 17,000 cases of emergency visits due to foreign body aspiration with 160 deaths in children less than 14 years.⁷

Aspiration of foreign bodies (FBs) may be unobserved and could be asymptomatic resulting in deaths if no urgent action is taken.

Commonly inhaled foreign bodies in 70 to 80% of reported cases are vegetative matters like peanuts in USA, watermelon seeds in Egypt, pumpkin seeds in Greece⁸ and groundnut and fish bones in Nigeria². A study by Ogunleye in Nigeria reported seeds, polyurethane foams, stone, plastic toys, beads and

erasers as common nasal FB.⁹ The management of these cases involve rigid endoscopy with forceps removal under general anaesthesia for pharyngo-oesophageal and laryngeal under local anaesthesia (LA) or no anaesthesia for nasal FB.

This 8 year review in an urban University hospital, in Ilorin, Nigeria is to audit the number, nature, sites of aerodigestive foreign bodies impactions and methods of removals and outcome in a developing country setting like ours.

Patients and Methods

This is an 8 year retrospective review of children with history of ingestion or aspirations of FBs into the mouth or nasal cavity respectively at the ENT department of the University of Ilorin Teaching Hospital, Ilorin, North Central Nigeria over seven years between January 2001 and December 2007. Demographic data, history of FBs ingestion/aspirations, radiological findings [Plain Xrays soft tissue neck (AP&lateral)] were documented from patients' case files.

The techniques used for FBs removal were:

1) Outpatient clinic procedures for FBs lodged in the nasal cavity/ or tonsillar faucial pillars which were removed with the Jobson Horne probe/crocodile forceps under 10% Xylocaine spray under direct vision with headlights.

2) Rigid pharyngo-oesophagoscopy and Direct Laryngoscopy with removal under GA for FBs in the pharyngo-oesophageal / larynx respectively. Patients were discharged after 24 to 48 hours on antibiotics, analgesics to the outpatient clinic. All this information was entered into computer and analyzed descriptively using EPIINFO 11 statistical software.

Results

Eighty-one children within the age range of 9 months to 16 years were seen over the study period (Mean 4.28, SD 2.95). The commonest age range was 0 to 4 years with 62 children (76.5%) of which those between 2 to 4 years accounted for 84.9%, 5 to 8 years were 16 (19.8%), 9-12 years were 2 (2.5%) and only a child between 13 to 16 years (1.2%) as in Table 1. There were 49 males and 32 females with a male female ratio of 1.5 to 1.0.

The presentation and findings in patients with pharyngo-oesophageal FBs are dysphagia in 25 (65%), drooling of saliva in 22 (55%), cervical tenderness in 12 (30%); while nasal FBs presented with unilateral offensive nasal discharge in 26 (85%), nasal blockage in 22 (70%), epistaxis in 6 (20%), visualization of FBs was possible in 28 of the 31 children with nasal FBs (90%). Laryngeal features included stridor 2 children (33.3%), breathlessness in 2 children (33.4%) and asymptomatic in 2 children (33.3%).

The nature of FBs showed coins in 48 (59.3%), fish bones in 15 cases (18.5%), non vegetative FBs in 12 cases (14.8%), vegetative FBs in 2 (12.5%) and miscellaneous in 4 cases (5%) (Table 2).

Correlation of nasal FB site and age distribution showed 31 (38.3%) had nasal FBs (Right 18, Left nostril 13).

Foams were the commonest nasal FBs in 12 cases (38.7%), seeds (Beans and maize) in 8 (25.8%) cases, stones in 6 (16.9%) cases and miscellaneous objects in 5 cases (16.1%).

The highest incidence of nasal FBs was in the age group of 0 to 4 years in 23 cases (74.2%), 5 to 8 years in 8 cases (25.8%) and none between 9 to 16 years as in table 3. The parents gave a history of unilateral offensive nasal discharge in 23 cases (74.2%) and in only 8 (25.8%) with visualization of the objects in the nose. About 29 of the cases (93.5%) were removed in outpatient department under no anaesthesia and only 2 (6.5%) were removed under GA in the theatre due to foreign body impaction.

The paediatric oesophageal FBs in 23 children (28.4%) were coins exclusively, distributed as 5 to 8 years being 10 (43.5%), 0 to 4 years was 8 (34.8%) and 9 to 12 years were 5 (21.7%). All were at the level of the cervical oesophagus and visible on plain radiographs soft tissue neck and were removed under GA via rigid oesophagoscopy within the first 48 hours of incident and none had complications.

There were 16 (19.8%) oropharyngeal and hypopharyngeal FBs with 6 cases of coins (50 Kobo and one Naira), 5 cases of fish bones and 5 cases of miscellaneous objects [Neck chains, office pins and earrings].

The coins were removed under GA and were found in the hypopharynx and above cricopharyngeal sphincter. The fish bones were found around the tonsillar faucial pillars in children aged 9 to 16 years and were removed with forceps under 10% Xylocaine Spray. There were 6 laryngeal FBs (7.4%), all were fish bones located in glottic region mostly in those below 4 years of age [5 of them (83.3%)] and only 1 (16.7%) within 5 to 8 years. 4 (66.7%) presented late (5 to 7 days) due to their being treated for asthma by the referring physicians. The clinical presentations were stridor in 4 (66.7%), wheezing in 3 (33.4%). All had direct laryngoscopy with removal of FBs under GA and 2 had tracheostomy due to severe upper airway obstruction and both were decanulated after 10 to 14 days. There were 5 (6.2%) cases of FBs seen in the large intestine, principally coins, all due to late presentations resulting in migration along the GIT and a neck chain found at the right iliac fossa, all were expelled in the faeces without any complications.

Discussion

Foreign body impaction in the upper aero-digestive tract has been a problem since the earliest of reported history. Jackson defined it as an object or substance foreign to the location where it is found and he classified them as exogenous and endogenous.¹⁰ Groundnut, castor seed, pieces of brick, stones, ear rings, pins and whistles are some of the commonly aspirated FBs into the airway whilst fish bone, mutton piece, chicken bone and coins are the commonly swallowed into the food passage.¹⁰

Chevalier Jackson and Chevalier L. Jackson in 1949 through 1957 introduced bronchoesophagology as a unit of medical science. The basic principles in the evaluation and management developed by them have reduced the mortality associated with foreign body removal significantly from more than 20% to 2%.¹¹ A total of 81 children were evaluated with over 95% below 9 years of age out of which 80% were under 4s' similar to findings by other workers whose most work revealed under 5s' with a male preponderance.^{2,5,12-14} The reasons adduced for included lack of molars needed for proper grinding of food, less-controlled coordination of pharyngeal muscles during swallowing and immaturity of laryngeal elevation and glottic closure. Also an age-related tendency to explore the environment by placing objects in the orifices and they are often running or playing at the time of feeding.¹⁵

Over 50% of the FBs were impacted in the pharyngo-oesophageal region and the rest were in the nasal and laryngeal region similar to report from Panduranga et al, Hung & Lin and James et al who found 87.8% & 12.2%, 76.2% & 24.7%, 80% & 20% of FBs in the food and air passages respectively.^{1,16,17} Swallowed FBs in children may pass through the gastrointestinal tract without problems but occasionally become impacted in the esophagus due to its size or shape, in areas of physiological oesophageal narrowing or extrinsic compression or congenital anatomic abnormalities. Most esophageal foreign body impactions occur in the cervical esophagus distal to the cricopharynx.¹⁸⁻²⁰ This was similar to finding in this report. Some study have reported oesophageal foreign body impactions above an esophageal stricture site.²⁰

Considering individual sites of FBs impaction, the nasal cavity was the commonest in 38.3% of cases, similar to Higo et al who found the common sites among Japanese children as the nose, the pharynx, oesophagus in that order.²¹

The highest incidence of nasal FB's was among the under 4s' age group similar to that found by Das et al and Endican et al among Melanesian children.^{22,23}

The commonest nasal FBs was foam in nearly two fifth of the children, similar to previous series, but at

Variance with Higo et al.²¹ who found plastic toys among Japanese children other objects were beans and maize seeds in a quarter of them and stones as well. The commonest nasal presentation was offensive unilateral nasal discharge similar to report in Endican series among Malanesian children,²³ nearly all were removed at the outpatient clinic without complications.

The next common site was the oesophagus in 28.4% of cases and were exclusively coins. Coins are familiar objects readily found in our environment and are handled by these children especially the unattended as found in previous series from Nigeria.^{2,5,24} They were found distal to the cricopharyngeal sphincter as in other series in children.¹⁸⁻²⁰ The oesophagus is a passive organ with inability to retain swallowed FBs.²⁵ All had rigid oesophagoscopy with removal under GA without any complications, which is dependent on the size and duration of FBs.²⁴

Next were 19.8% of FBs found in the oropharynx, commonest site being the hypopharynx after plain radiographic examinations, they were all removed under GA via rigid oesophagoscopy. Fish bones were the second commonest buried around the tonsils, tongue bases and pharyngeal mucosa. They were readily visible with adequate illumination and were removed with forceps at the clinic. The relative occurrences of coins and fish bones are similar to findings of Alabi et al but at variance with findings from among Melanesian children.²³ Miscellaneous pharyngeal FBs included cases of neck chains, office pins, ear rings that had to be removed with rigid pharyngoscopy under GA in the theatre.

Most of the inhaled FBs were lodged in the larynx were all fish bones common among the under 4s' (83.3%) of age similar to Melanesian children series.²³ Late presentation was observed among 2 children that necessitated tracheostomy with subsequent DL with extraction under GA. The late presentations were associated to distance from health facility, wrong diagnosis and cost as they were initially being treated for asthma and upper respiratory tract infection at the emergency department.

Some of the patients (6.2%) had FB (Neck chain and coin) migration to the large intestine. This migration may account for late presentation and the FBs were seen only after the plain radiographs of the gastrointestinal tract this is quite common in our area of practice.²⁶ All were seen in the faeces after three to five days without any complications.

Aerodigestive tracts FBs are common especially in children aged 2 to 4 years, commonest sites being the nose and pharyngo-oesophageal region with coins and non vegetative FBs constituting four-fifth.

Health education of parents is needed on placement of these objects in the vicinity of these children and a high index of suspicion among practitioners on the need for early referral to the Otolaryngologists to avoid needless surgery and complications even though FBs could be removed successfully, the best approach is prevention.

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