

Aerodigestives foreign bodies: Clinical profile and management

Amina Lami Okhakhu, Ngozi Carol Onyeagwara

Department of Ear, Nose and Throat, University of Benin Teaching Hospital, Benin City, Nigeria

Abstract

Background: Upper aerodigestive foreign bodies are a common occurrence in otorhinolaryngologic practice. We present our experience with the management of upper aerodigestive foreign bodies over a 5-year period at the Ear, Nose and Throat Department of the University of Benin Teaching Hospital, Benin City, Nigeria.

Methods: A retrospective review of medical records and theatre documents of patients presenting with aerodigestive foreign bodies between January 2010 and December 2014 were carried out.

Results: A total of 82 cases of aerodigestive foreign bodies were seen comprising of 53 males and 29 females in a ratio of 1.8:1. Age ranged from 9 months to 85 years. The group most at risk of aerodigestive foreign bodies are those aged between 0 and 4 years. Common foreign bodies were parts of toys, fishbone and groundnut in children and dentures and fishbone in adults.

Conclusion: Aerodigestive foreign bodies are a common occurrence especially in the paediatric age group. Early detection and removal can forestall complications.

Keywords: Aerodigestive, airway, bronchoscopy, foreign body, laryngoscopy, oesophagoscopy

Address for correspondence: Dr. Ngozi Carol Onyeagwara, Department of Ear, Nose and Throat, University of Benin Teaching Hospital, Benin City, Nigeria.
E-mail: carol4u2k6@yahoo.ca

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INTRODUCTION

Inhaled or swallowed foreign body is a common occurrence in otorhinolaryngologic practice and is usually associated with a high rate of morbidity and mortality.¹ This is a common phenomenon in young children, the elderly and mentally subnormal individuals where the presentation is quite alarming and frightening for the guardians. The location of the foreign body would usually determine the pattern of presentation. However, this is not always clear-cut. Stridor or dyspnoea of sudden onset in a child is essentially regarded as a case of impacted laryngeal foreign body until proven otherwise.^{2,3}

Many factors have been attributed to the occurrence of upper aerodigestive foreign bodies. These include poorly

prepared food, hurried feeding, poor vision, mental retardation, drug addiction/intoxication and dentures.^{4,5}

The foreign bodies encountered in the aerodigestive tract vary ranging from whistles, parts of toys, coins, metallic objects, vegetative materials and dentures.¹⁻⁵ Dentures as aerodigestive foreign body are seen commonly in adults with ill-fitting long worn dentures.⁶ The foreign bodies in children appear to have a predilection for the airway while those in adults are more likely to be oesophageal.⁷ Aerodigestive foreign bodies create anxiety for the patient and the caregivers and the complications associated with their presence and management abound and include airway obstruction, aspiration and pneumonia, oesophageal perforation and sometimes death. This study is carried

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out to create awareness, highlight causes, pattern of presentations and management as seen in our facility.

METHODS

This is a 5-year retrospective review of all patients with aerodigestive foreign bodies managed at the University of Benin Teaching Hospital, Benin City, Nigeria. This hospital which is located in the Niger Delta in the Southwestern part of the country serves the state of Edo and the surrounding states of Ondo and Delta for which it is the main tertiary referral centre. The study involved collation of data from the hospital records of all patients, who presented with aerodigestive foreign bodies to the Ear, Nose and Throat Department of the University of Benin Teaching Hospital, Benin City, Nigeria, between January 2010 and December 2014. Data extracted from the case notes included age, sex, nature of foreign body, level of impaction, result of radiological investigations, method of removal, treatment outcome and complications. Patients, whose case records were incomplete or defective, were excluded from the study. Data were entered into spreadsheets and analysed for simple descriptive statistics using the SPSS Statistics for Windows, Version 17.0 (SPSS Inc., Chicago, Ill., USA).

RESULTS

A total of 82 cases of aerodigestive foreign body were seen during the period under review. There were 53 (64.6%) males and 29 (35.4%) females, with a male:female ratio of 1.8:1.

The ages of the patients ranged from 9 months to 85 years.

The mean age was 19.2 years (± 23.4 standard deviation). The most common age group affected were 0–4 years of life [Figure 1].

The foreign bodies were varied with parts of toys being the most common followed by fishbone. Other commonly encountered foreign bodies were groundnut, beads and earrings in the paediatric age group [Figure 2].

In the adult age group, dentures were the most common foreign body encountered followed by fishbone and meat bolus [Figure 3].

A large proportion of the foreign bodies were located in the oesophagus 42 (51.2%), 32 (39.0%) were in the laryngotracheal tree, while 8 (9.8%) were located in the pharynx. Foreign bodies in the paediatric age group were more likely to be impacted in the laryngotracheal airway as opposed to oesophageal location which was the commoner site in the elderly patients [Figure 4].

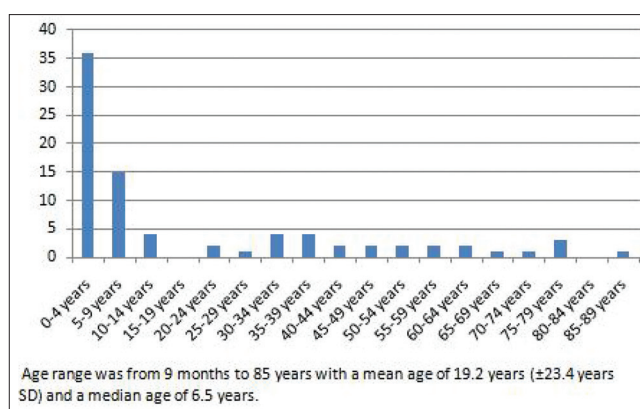


Figure 1: Age distribution of patients

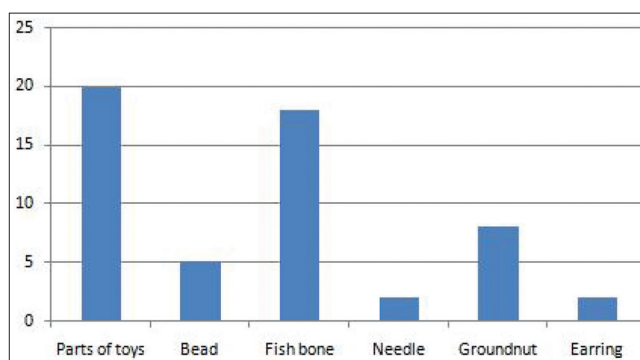


Figure 2: Nature of foreign bodies in children

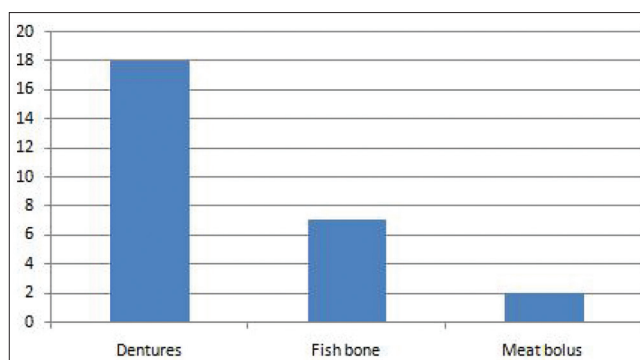


Figure 3: Nature of foreign bodies in adults

The removal after history, physical examination and radiographic confirmation was by rigid fibre-optic laryngoscopy and bronchoscopy for laryngotracheal foreign bodies, while rigid oesophagoscopy was the method used for oesophageal foreign bodies. Some were removed at induction of anaesthesia with a Magill's forceps.

DISCUSSION

Aerodigestive foreign bodies are a common occurrence worldwide. Early recognition can forestall the morbidity and mortality associated with this condition especially in children. Aerodigestive foreign body forms the third leading cause of

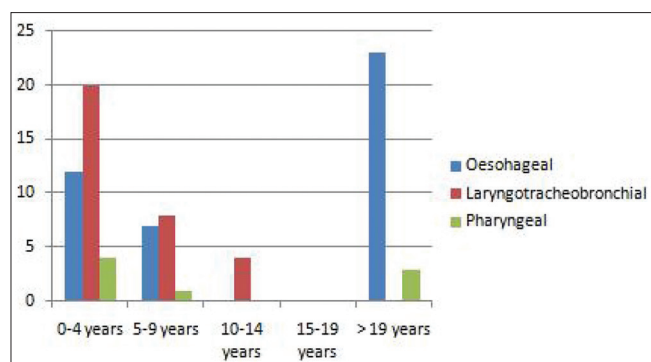


Figure 4: Location of foreign bodies

death in children <1 year of age with the under-fives being at the greatest risk for foreign body aspiration.^{1,7-9} This was observed in our study where those aged 0–4 years were mainly affected accounting for more than 45% of the cases of aerodigestive foreign bodies seen during the period under review. Many reasons have been adduced for this increased susceptibility ranging from the absence of molar teeth, oral exploration and poor swallowing coordination and immature protective cough reflex.¹⁰

We also noted a male preponderance in the occurrence of aerodigestive foreign bodies. This is similar to the findings by other studies.^{3,9-12} This was observed in both the paediatric and the adult groups.

The most common type of foreign body encountered in our study was detachable parts of toys. This is at variance with studies from other parts of the world where coins³ and groundnuts¹³ were the commonly encountered foreign bodies. This may be due to the absence of legislation or enforcement of legislation on appropriate toys and sizes for children. In our community that is exposed to importation of unregulated cheap toys from Asia, this may get worse, and efforts may need to be made to effectively police this. Parts of toys are commonly made from plastic material which is not radiopaque. This further compounds the diagnosis of the foreign body. Children are known to commonly explore objects while playing by inserting them into the oral cavity and other orifices. Disk battery was ingested by one of the patients and impacted at the region just below the cricopharyngeus. Attempt at the removal endoscopically failed, and a repeat radiograph of the trunk revealed displacement and distal migration of the disk battery which was subsequently passed out a day later. Disk batteries are particularly dangerous because of the risk of leakage of the alkaline content of the battery. Coins were not encountered during the period under review, and this may be as a result of the very low or nonusage of coins in Nigeria when compared to other climes. A previous study had observed

an increase in the incidence of coin ingestion following the reintroduction of coins in the country in the recent past.¹⁴ There is a dire need for parental or caregiver education about age appropriate toys for their children to avoid the potentially fatal complications of foreign body aspiration.

Fishbone was the second most common foreign body encountered in our study. Fish is a commonly available source of protein in most households. This collaborate the findings by other researchers where fishbone was the most common foreign body encountered.¹⁵

Poor preparation of food with fish may lead to fishbone impaction in the aerodigestive tract.⁵ Many of the patients with fishbone in the aerodigestive tract had undergone digital manipulation of the upper aerodigestive tract before presentation at our facility. This caused contusion of the soft tissue with oedema and distortion of anatomical landmarks. Patient education is very important in discouraging this trend which can potentially worsen the impaction or cause a distal migration of the foreign body.

Aspirated foreign bodies tend to present with difficulty with breathing of varying degrees, stridor, wheeze and cough. It is common in children <3 years of age. It could present with diagnostic quandary when the incidence is not witnessed. Oesophageal foreign bodies which were commoner among the older patients presented with dysphagia, discomfort, drooling and a pointing sign.

Peanut aspiration was encountered in our study as reported by other studies.¹³ If the peanut is lodged in the tracheobronchial tree, the patients may present with severe respiratory distress. The peanut can dissolve liberating its lipid causing a lipid pneumonitis which is associated with high morbidity and mortality.¹³ Two of the children who presented with severe respiratory distress secondary to peanut aspiration had bronchoscopy with no yield, while the others who presented earlier had fragments of the peanut removed piecemeal. Both groups were managed with antibiotics and systemic steroids with the resolution of symptoms. One child succumbed to the pneumonia and consolidation in the lungs accounting for the mortality recorded. Tracheobronchial toileting and the use of steroids and antibiotics have been shown to be effective in the management of lipid pneumonitis.

The pattern of presentation depends on the site of impaction of the foreign body. The patients with airway foreign bodies tended to present earlier than those with oesophageal foreign bodies. Most of the patients 72 (88%) had presented at a peripheral healthcare centre before presentation at our facility.

This may contribute to the apparent delays in presentation at our facility. Only a few 12.2% presented to our centre within 24 h following the foreign body incidence. This may be partly attributed to the fact that many of them lived far from our centre and may not be aware of where facilities are available for endoscopy. This finding is at variance with finding by Kirfi *et al.* who recorded a high presentation rate within 24 h of the foreign body incidence.¹⁶

Many of those who ingested their dentures had been using them for between 10 and 14 years before the ingestion. This usually occurs when they are taking their pills. The position commonly described is that of a backward head thrust with hyperextension of the neck (in the 'sniffing morning air') posture when taking medication. They had not followed up with their dentists, and the dentures were noticed to be loose fitting. This is akin to the findings of worn dentures by Nwaorgu *et al.*⁶ Decreased palatal sensitivity of denture wearers has also been adduced by other studies to be responsible for oesophageal foreign body ingestion in this group.¹⁷

The plain radiographs of the soft-tissue neck were suggestive of the presence of foreign body in 64% of the patients. The patients with radiopaque foreign bodies were more easily detected on the plain radiographs. Air entrapment was the sign seen in a 1/3 of the patients who swallowed their dentures. Endoscopy was performed in 71 (86.2%) for foreign body removal. A tracheostomy tube was inserted before endoscopy in the cases of suspected laryngeal foreign body impaction to protect against distal migration of the foreign body during attempts at its removal. Open external oesophagotomy and thoracotomy were carried out in 3 (3.7%) where the foreign body could not be retrieved endoscopically. This was associated with increased morbidity and prolonged hospital stay. The foreign bodies located in the pharynx were usually retrieved using the Magill's forceps by the attending anaesthetist at induction of anaesthesia.¹

The complications encountered in this study included upper airway obstruction, retropharyngeal abscess and death.

Limitation

This was a retrospective study, and data storage was not computer based and as such this may not represent the total number of patients seen in the study.

CONCLUSION

Aerodigestive foreign bodies continue to be a cause of worry for parents and physicians alike. There is a need to work toward having safer environment for young children and the need for early presentation to forestall morbidity and mortality.

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Conflicts of interest

There are no conflicts of interest.

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