



Audit of Otologic Foreign Bodies Seen at Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, North-East, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author AA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors FAI and JU managed the analyses of the study. Authors ASA, ME and JM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Foreign bodies (FBs) in the ear are common emergency presentation in ear, nose and throat clinics. They occur in all age groups but are commoner in children and the mentally retarded. Whereas children tend to explore their orifices out of curiosity, adults experience it accidentally. The aim of this study was to audit the Otologic FBs, treatment protocol and complications at the ATBUTH, Bauchi, where most of these cases were managed by ear, nose and throat nurses.

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Materials and Methods: Three year retrospective data comprising biodata, presenting complaint, duration of presentation, type of foreign body, ear(s) involved, mode of extraction, attending medical personnel and complication were obtained from the medical records of the patients. These data were analyzed in simple descriptive form using Excel 2010.

Results: There were 257 patients with FBs in their ears comprising 146 males and 111 females, aged 1 year to 70 years. 160(62.3%) were 10 years and below. The complaint of FB lodgment by individuals/caregivers was 49%, pain 23%, impaired hearing 18% and ear discharge 10%. 143 cases presented within 24hours, 79 within 48 hours and 35 beyond 48 hours. Seed grains accounted for 69 (26.9%), insects/cockroaches 52(20.2%), beads 46(17.9%), stones/pebbles 39(15.2%), and cotton buds 35(13.6%), plastic materials 10(3.9%) and papers 6(2.3%). Treatment using water irrigation accounted for 65% while manual instrumentation was 35%. Complications were seen in 61(23.7%) cases.

Conclusion: Otologic FBs still remain a significant presentation in ENT Units. Knowledge and skill to their proper management are keys to minimizing complications. Due to the limitations of other health care givers in these regard, it is recommended that every Centre with high volume of patients should engage the services of otolaryngologist to avoid complications.

Keywords: Audit; otologic foreign bodies; Bauchi.

1. INTRODUCTION

Foreign bodies (FBs) in the ear are common emergency presentation in ear, nose and throat clinic. They occur in all age groups but are commoner in children and the intellectually disabled. Whereas children tend to explore their orifices out of curiosity, in adults it could be accidental lodgment. Anatomically, inserted foreign bodies are usually found in the external auditory canal (EAC), lateral to the isthmus [1]. However failed attempts at removal may push the FB through the tympanic membrane into the middle ear or beyond. The ear involved depends to a large extent on the dominant hand the individual uses. Foreign bodies may be inanimate or animate, organic or inorganic, graspable or non-graspable ranging from cotton wool, beads, stones, paper, plastic toys, buttons, crayons, toy batteries and vegetable matter like seeds to insects [1,2,3]. Development of symptom will depend on the nature of the FB and complications may ensue from failed attempted removal. Prolonged presence may cause obstruction of cerumen clearance; hygroscopic vegetable matter may swell up resulting in inflammation and oedema of the skin of EAC, while leaking alkaline electrolyte solution from alkaline button batteries may cause extensive liquefactive necrosis of surrounding tissues [1]. All these effects may lead to bacterial otitis externa or malignant otitis externa with resultant pain, bleeding or discharge from the ear, conductive deafness and external canal atresia. Furthermore, attempted failed removal by untrained medical personnel may result in complication such as injury to the EAC, tympanic

membrane perforation with resultant displacement into the middle or even inner ear [4,5,6]. The criteria used by American Family Physicians [strength of recommendation taxonomy (SORT) evidence rating C] recommend that all aural FBs should be referred to ENT specialty except those that are directly 'visible and graspable [7,8,9,10].

Removal of the FB depend on its nature and varies from ear syringing with water at body temperature, manual instrumentation (use of Jobson Hornes probe, crocodile forceps or cerumen hook), vacuum suction and open surgical procedure. The key is adequate restraint of the child, good illumination and appropriate instrumentation.

The aim of this three years retrospective study is to audit the Otologic FBs, treatment protocol and complications at the ATBUTH, Bauchi, where ear, nose and throat nurses manage most of these cases with difficult ones kept for visiting consultants and compare same with earlier reports.

2. MATERIALS AND METHODS

This was a three year retrospective study from April 2012 to March 2015. The medical records of the patients were retrieved. Data extracted from the records included biodata, presenting complaint, duration of presentation, type of foreign body, ear(s) involved, mode of extraction, attending medical personnel and complication. These data were analyzed in simple descriptive form using Excel 2010.

3. RESULTS

The total number of patients attended to at the unit during the study period was 2118 patients. There were 257 patients with FBs in their ears. There were 48 other FBs with no site of lodgment indicated, so were excluded from the study. There were 146 males as against 111 females giving a ratio of 1.3:1. Their ages ranged from 1 year to 70 years (Table 1). 160(62.3%) were 10 years and below.

Table 1. Age distribution

Age category (years)	Frequency	Percentage
1-10	160	62.3
11-20	28	10.9
21-30	15	5.8
31-40	21	8.2
41-50	24	9.3
51-60	6	2.3
61-70	3	1.2
Total	257	100

The commonest presentation was complaint of FB lodgment by individuals/caregivers 125(49%), pain 59(23%), impaired hearing 47(18%) and ear discharge 26(10%) (Figure 1). Most cases 143 presented within 24 hours, 79 within 48 hours and 35 beyond 48 hours. The type of FB ranges from seeds/ grains, cotton bud, insects/ cockroaches, beads, stones, papers to plastic material. Seed grains were the commonest FBs found accounting for 69 cases (26.9%), insects/cockroaches 52(20.2%), beads 46(17.9%), stones/pebbles 39(15.2%), and cotton buds 35(13.6%), plastic materials 10(3.9%) and papers 6(2.3%) (Figure 2).

Methods used commonly to extract the FBs were ear water irrigation using 20 mls syringe with size 18 cannula tip (168;65%) and manual instrumentation -89(35%) (Figure 3). There were no vacuum suction and open surgical extractions.

Complication of injury to the external auditory canal and tympanic membrane perforation were found in 46 and 15 ears respectively (side of ear was not indicated). Most of these were patients who had attempted removal elsewhere and those attended to by new staff of the unit. In 22 (8.6%) cases, the seed grains became swollen after attempted water irrigation and were manually removed by the visiting Ear, Nose and Throat consultants under sedation. A particular child had 3 and 4 cotton buds lodged in her ears at

presentation. In 183 (71.2%) cases the side of the ear with FB lodgment was indicated while in 74 (28.8%) cases the affected ear was not mentioned. Of the 183 ears, the right ear accounted for 106 (57.9%) while the left was 77 (42.1%). Foreign body extraction by ear, nose and throat nurse personnel accounted for 190 cases (73.9%) while 67 cases (26.1%) were referred to visiting consultants after failed attempts.

4. DISCUSSION

Aural foreign bodies remain an important presentation to the otolaryngology clinic and affect all age groups. Whereas in adults these could be attributed to practices of self-ear cleaning or soothing an itchy ear; in children there may be inserted deliberately as they have the habit of exploring the orifices by themselves or by their playmates [1,3-5]. We found children, who were 10 years and below to be mostly involved, constituting 160(62.3%). The habit of exploring orifices may be responsible for this high figure. Our finding agrees with many studies by different authors across the globe such as Iseh and Yahaya (61.8%) [11], Ologe et al. (77.6%) [12], Chiun et al. (65.4%) [13], Yaroko et al. (59.3%) [14], Al-juboori et al (25.5%) [9]. We also found male preponderance in 146(56.8%) cases like in other studies [5,11,12,15,16]. This could be due to the belief that boys are more adventurous than girls.

Majority of patients in this study comprising 143(55.6%) cases presented within the first 24 hours by themselves or with caregivers and the main complaint was FB lodgment in the ear which accounted for 125(49%). Though Ologe et al. [12] and Iseh and Yahaya [11] documented asymptomatic and deliberate insertion in most of their patients respectively; the former stated that the duration of presentation was mostly after 1 week.

The right ear still remains the predominant side of lodgment of FB, accounting for 106(57.9%). Several other studies such as Ijaduola and Okeowo (63%) [5], Ologe et al. (65%) [12], Chiun et al. (61.7%) [13], Yaroko et al. (58.3%) [14] and Rafique et al. (49.1%) [16], also documented predominance of the right ear. The reason adduced by most authors is that most people are right-handed, hence the ease of self inserting FBs into that side of the ear. This may equally be the reason for the right ear predominance in our study.

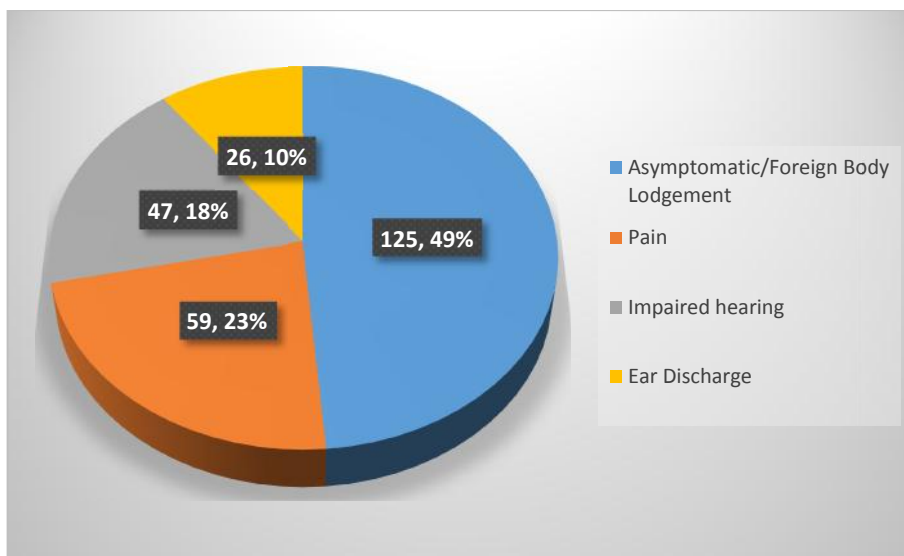


Figure 1. Presenting complaint

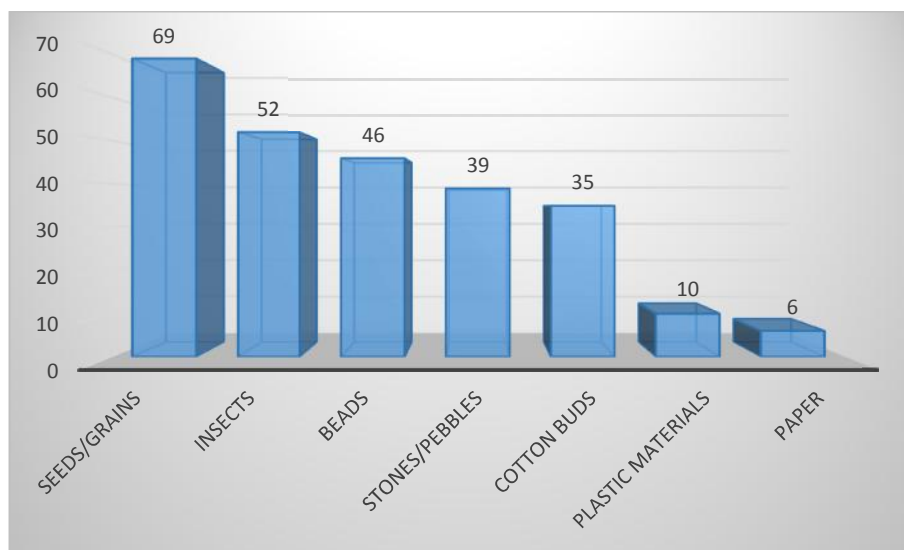


Figure 2. Types of foreign bodies

The type of the ear foreign body especially in children seems to depend on the commonly found objects within the reach of the child. We found seed grains as the commonest FBs in the ears accounting for 69(26.9%), followed by insects/cockroaches 52(20.2%). Our finding is similar to that of Ologe et al. [12], Iseh and Yahaya [11] and Chiun et al. [13] who found grains or agricultural seeds and nuts in 27.9%, 15% and 47.1% in their series respectively. However, it contrasted sharply with Yaroko et al [14], Rafique et al. [16], Al-juboori et al. [9] who

found tick (37.5%), Beads and Pearls (30.4%) respectively. The predominance of seed grains in our study maybe due to the high farming population in the study location which makes seed grains a common household object and 'staple food' [12] while insects/cockroaches are found in poorly illuminated and dirty homes.

The methods applied for ear foreign body removal depend on the nature of the FB and the skills of the practitioner which is inversely proportional to the complications encountered.

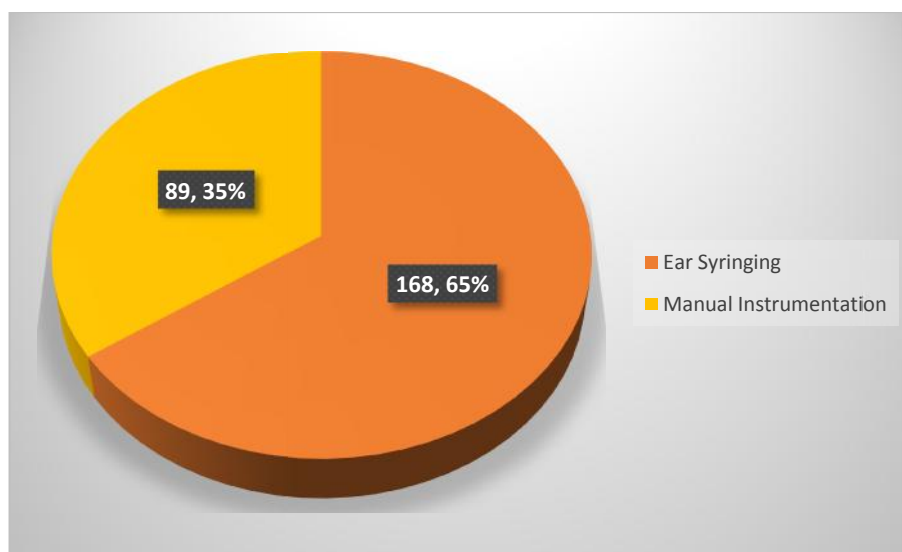


Figure 3. Treatment methods

Though there was no case of FB dislodgement into the middle ear, we found 61(23.7%) complications of injury to the external auditory canal and tympanic membrane perforation who were mainly patients attended to by other caregivers before reaching our hospital and the new staff of the unit. Although, the complication rate was high, there were no cases of litigation arising from mismanagement recorded in the medical records of the patients used in the study. Previous workers have alluded to the risk of these complications, but the incidence in our study is unacceptably high when compared to the 1%-6% recorded by other otolaryngologists [1,4-6,15,16]. This brings to fore the need for every tertiary health institution to have at least an otolaryngologist either as fulltime or visiting who will supervise the activities of the ENT nursing personnel and also carry out their continuous training and retraining.

Our findings indicated that ear water irrigation was the commonest method employed to remove the FBs by the ENT nursing staff. This was on the contrary to the 73.8% of manual removal under direct vision by Ologe et al. [12]. Perhaps this showcases the skill of the attending nursing personnel. However, the need for caution in the use of water irrigation for hygroscopic objects such as seed grains was demonstrated by our finding in 22(8.6%) cases which became swollen warranting removal by the otolaryngologist under sedation in the theatre [1,2]. Although in advanced countries, according to the SORT

evidence rating C, 'visible and graspable ear FBs' can be attempted by Family Physician, emergency room doctors and Paediatricians with good results [8-10,17], this is a mirage in resource constraint centers like ours where non-availability of appropriate instruments is a serious issue. The lack could be so bad that other inappropriate objects such as paper clip could be fashioned as probe to remove FBs as was alluded to by Ezechukwu and Nwawolo in their publication 'where there was no otorhinolaryngologist' [18]. When required instruments are made available, cognate skill could be achieved through regular medical education/ continuing professional development (CME/CPD) sessions to avoid complications.

5. LIMITATIONS

We discovered poor documentation by attending nursing personnel which was responsible for 48 FBs excluded and 74 others in the ears with affected side not mentioned. The need for proper medical record keeping for research and health planning was highlighted by Ameh and Shehu [19] and Iseh and Yahaya [11] respectively. We reiterate the importance of this as 48 cases were excluded from this study on account of improper documentation. The 74 others with no indication of side of the ear foreign body lodgment affected the final analysis of the side of the ear involved and the overall statistics in this study.

6. CONCLUSION

Care givers should pay more attention to their wards to avoid FB lodgment in the ears. Health education on Ear Care should be intensified at all levels of health care to both practitioners and clients, and in schools which will help to avoid lodgment of objects deliberately in the ear. A trained ear, nose and throat specialist should be employed either on fulltime or visiting (part-time) basis in centers with high volume of patients of this magnitude who will further supervise the practice of the ear, nose and throat nursing personnel and effect their training and re-training in order to minimize complications.

7. RECOMMENDATION

The training of ear, nose and throat nursing personnel should encompass the characteristics and management of all foreign bodies and emphasize the importance of adequate documentation or good medical record keeping as well as their limitations in the management of these foreign bodies for better service delivery.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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