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Aural foreign bodies and their management: our experience

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ABSTRACT

Background: Aural foreign bodies (FB) are a common presentation at ENT outpatient department mostly seen in paediatric population. Some are easily managed while others should be dealt with caution and extreme care. The objectives of the study were to analyze the types of aural FB, their incidence in different age groups and evaluate management methods.
Methods: This is a prospective descriptive study on patients of all age groups with aural FB presenting to the ENT Outpatient Department in a tertiary care centre for a period of 1 year. The clinical presentation, type of FB, incidence in different age groups and management methods were analyzed.
Results: 200 patients aged 2-78 years were evaluated. Age group of under 15 years was most affected (70%). Male to female ratio was 1:1.326. Majority (104 out of 200) presented with a history of FB insertion in the ear while others presented with aural pain and discharge. In 10 cases, ear foreign body was an incidental finding. Most common FB was seeds in children and cotton buds, bird feathers in adults. Most of the cases were managed without anaesthesia with use of headlight. Ear probes were used in 45% cases followed by forceps, suction and syringing in remainder.
Conclusions: Most of the aural foreign bodies can be managed in the outpatient department itself without any anaesthesia under direct vision of headlight with the help of simple instruments without any complications.

Keywords: Ear, Foreign body, Management methods

INTRODUCTION

Aural foreign bodies are a very common presentation at the ENT outpatient department. They are most commonly seen in the paediatric age group and in emotionally unstable adults. Objects get stuck in the ear if they are placed too deep during insertion. Children put objects in their ears because they are bored, curious, or copying other children or during play. In adults, itching is one of the main reasons for the usage of different objects like match sticks, pins in addition to ear buds to clean ears which may get lodged inside.

Within the external auditory canal foreign bodies can be classified as inanimate or animate (live). Inanimate objects can be either inert or irritant, organic or nonorganic and hydrophobic or hydrophilic.[1] The most common inanimate foreign bodies are cotton bud, pins, beads, seeds, small stones, match stick, piece of paper and small plastic objects. Among the animate foreign bodies, insects like ants, bugs and flies are common. Crawling insects create a sense of constant irritation while some bugs can cling on to the tympanic membrane and cause intense pain. In discharging ears flies are attracted to the foul smell and lay eggs which hatch out into larvae called maggots.[2]

Children present to the Outpatient Department most of the time as the parents give a history of incidental finding in ears. Some present with pain and discharge. Older children give a clear history of insertion of foreign body into ear on persuasion and also give information about the type of foreign body. Adults often present with cotton wool or broken matchsticks or other small objects which have been used to clean the ear canal and there may be a complaint of pain. The ear and the external auditory canal are richly supplied by vagus nerve (nerve of Arnold), the auricular-temporal branch of the mandibular nerve and by a small branch from the facial nerve which explains the severe pain that some of the patients experience.[3] The skin of the canal approaching the tympanic membrane is tightly adherent and any manipulation of the foreign body results in significant discomfort.[4]

The method of removal of aural foreign body depends on the type of foreign body, its position and cooperation of the patient.[5,6] Different methods of removal of aural foreign bodies include removal with aural probes/ forceps, irrigation or flushing and suctioning. If they are not handled properly, the foreign-bodies in external auditory canal may lead to lacerations in canal, tympanic membrane perforation, hearing loss, affection of membranous labyrinth, edema of ear canal making difficult a further specialized approach.[7-9]

Aural foreign bodies can be removed either under direct visualisation or with microscopy. A foreign body that is more medial or approaching the tympanic membrane is less likely to be removed with direct visualisation and needs to be removed under microscopic guidance.[8] Graspable objects have higher removal success rates under direct visualisation, which is readily available in any primary care setting. Batteries and vegetable matter expand with moisture and should be removed immediately when compared to most other foreign bodies.[10] Live insects need to be killed prior to removal by instilling alcohol or sesame or olive oil, into the canal.[11]

This study was carried out in a tertiary care centre to analyze the different types of aural foreign bodies, their incidence in different age groups and to evaluate their management methods.

METHODS

This Institution based prospective study was conducted on 200 clinically diagnosed cases of aural foreign body attending the ENT Outpatient Department, Maharajah's Institute of Medical Sciences, Nellimarla, India, from December 2018 to December 2019. All patients presenting to Outpatient Department meeting the inclusion criteria were included in the study.

Inclusion criteria

Patients of all age groups and with a clinical presentation of aural foreign body were included in the study.

Exclusion criteria

No patients were excluded in the study as all the patients with presentation of aural foreign body were included.

A detailed history was taken from the patient or in most cases the parents of the child as most common presenting age group was paediatric. Attempt was made to correctly know the nature of the foreign body from the history itself. The symptoms and co existing complaints like ear discharge were noted down according to a pre designed proforma.

A thorough examination of the ear with the foreign body was done and any injuries and scar marks were noted. Then the external auditory canal was examined first with headlight and without the aural speculum followed by with the speculum. Any discharge was carefully suctioned out to get a better view of the foreign body. The nature of the foreign body was ascertained. In foreign bodies placed medially, otoendoscopy was done both to examine and document the foreign body. The opposite non complaining ear was also examined. Very small children who are very un-cooperative were examined with the help of an assistant who ensured the immobility of the child. The nasal and oral examination was also done to complete a thorough examination.

Small and very lateral aural foreign bodies were removed with the help of aural foreign body probes or forceps. Some were removed with ear suction and some others required syringing. Live insects were first killed with oil, made immobile and then removed. Most of the cases were managed with minor difficulty without employing any anaesthesia. The foreign body removal was done under general anaesthesia for very small children and under local anaesthesia in the remaining un cooperative patients belonging to all age groups. Very few cases required removal under microscopic guidance as the foreign body in those cases was placed very medially or there was an eardrum perforation.

All the data was analysed and results tabulated.

RESULTS

In this present study a total of 200 cases presenting with aural foreign body were studied and the management methods analysed.

Age and sex distribution

People of all ages can present with aural foreign body. Age group of under 15 years was mostly affected (70%) in our study. Among this high incidence was observed in 0 to 5 year age group which comprised 30 percent of cases closely followed by 6 to 10 year age group which comprised 29 percent. The youngest patient was 2 years old and the oldest 78 years.

Number of males were 86 while females were 114 out of the total 200 cases. Male to female ratio was 1:1.326. The data is presented in Table 1.

Table 1: Age and sex distribution of cases.

Age group (in years)	Male	Female	Total number of cases	%
0-5	25	35	60	30
6-10	28	30	58	29
11-15	09	13	22	11
16-20	09	13	22	11
>20	15	23	38	19
Total	86	114	200	100

Presenting complaint

In our study, majority of the patients (104 out of 200) presented with a history of foreign body insertion in the ear, either as reported by self or by parents in case of the child. The next common presenting symptom was foreign body sensation seen in 20 cases. Other presenting symptoms include pain in the ear, discharge, hearing impairment, bleeding, fullness in ear and dizziness. Interestingly, in 10 cases, aural foreign body was an incidental finding in our study.

Table 2: Presenting complaint.

Symptom	Total number of cases	Percentage (%)
History of foreign body insertion	104	52
Foreign body sensation	20	10
Pain	17	8.5
Discharge from ear	15	7.5
Bleeding	12	6
Hearing impairment	11	5.5
Aural fullness	7	3.5
Dizziness	4	2
Incidental finding	10	5
Total	200	100

Nature of foreign body

In this study, the most common aural foreign body was seeds of various vegetables and fruits seen in 60 out of the total 200 cases. The next common was cotton bud seen in 32 cases. Live insects were seen in 20 cases while 6 cases had dead insect remnants. Feather remnants were seen in 15 cases. Stones were seen in 10 cases which comprised not only children but also adults with psychiatric disorders. The whole list of foreign bodies identified is presented in Table 3. Some of the foreign bodies observed are presented in Figure 1.

Table 3: Nature of foreign body.

Nature of foreign body	Total number of cases	Percentage (%)
Seeds of various vegetables and fruits	60	30
Cotton bud	32	16
Live insects	20	10
Feather remnants	15	7.5
Match stick	10	5
Stone	10	5
Plastic objects	09	4.5
Styrofoam balls	07	3.5
Eraser pieces	07	3.5
Paper	06	3
Insect remnants	06	3
Wire or metallic piece	05	2.5
Rice grain	05	2.5
Ear ring	04	2
Pin	04	2
Total	200	100

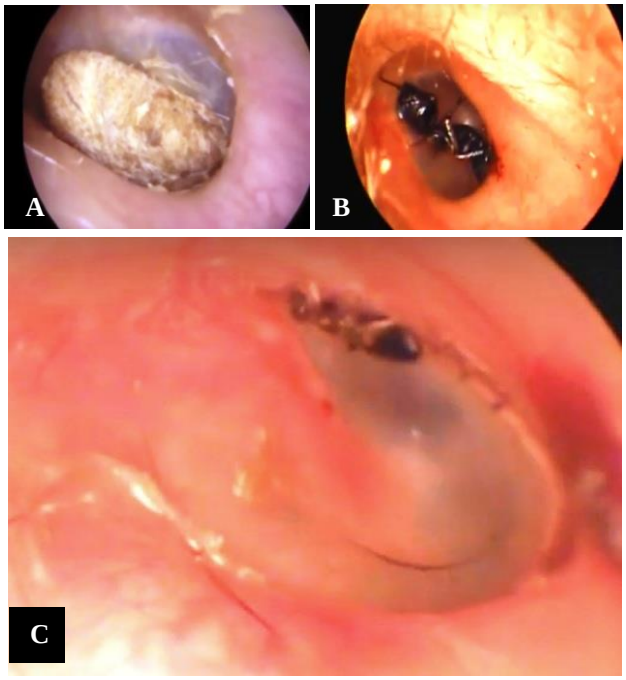

Figure 1: Different foreign bodies; (A) cotton bud, (B) dead insect, (C) live insect.

Management of aural foreign bodies

In this study, majority of the cases (98 out of 200) were managed without employing any anaesthesia. For very small children (37 out of 200), foreign body removal was done under general anaesthesia. Local anaesthesia was used in the remaining un-cooperative patients belonging to all age groups (65 out of 200).

Most of the cases (70%) were managed with the help of headlight under direct vision. Endoscopic removal was done in 19% cases. Very few cases (11%) required removal under microscopic guidance as the foreign body in those cases was placed very medially or there was a tympanic membrane perforation.

Different instruments used for removal of foreign bodies were Jobson Horne's probe (45% of cases), aural forceps (20%), ear suction (19%) and syringing (16%).

Most of the foreign bodies were approached through the per-meatal approach 195 (97.5%) while only 5 (2.5%) cases required a post aural approach to effectively remove the foreign body.

Table 4: Type of anaesthesia used for foreign body removal.

Type	Total number of cases	%
No anaesthesia	98	49
Local anaesthesia	65	32.5
General anaesthesia	37	18.5
Total	200	100

Table 5: Type of illumination or magnification used.

Type	Total number of cases	%
Headlight	140	70
Endoscope	38	19
Microscope	22	11
Total	200	100

Table 6: Type of instruments used for foreign body removal.

Type	Total number of cases	%
Jobson Horne's probe	90	45
Aural forceps	40	20
Suction	38	19
Syringing	32	16
Total	200	100

DISCUSSION

Aural foreign bodies are a common presentation in any ENT Outpatient Department. Aural foreign bodies are common finding in paediatric population as children are curious to explore their ears and thereby lodge objects inside ear.[12] Adults presenting with aural foreign bodies are rare and most of them have a habit of regularly cleaning ear with cotton buds.

In the present study, most common age group was under 15 years constituting 70% of the cases. 0 to 5 years constituted 30% of the total 200 cases closely followed by 6 to 10 years age group which constituted 29%. This finding is in agreement with the study of Chai et al who conducted a study on 480 cases of ear foreign body in which the highest incidence occurred in 0 to 5 years of age which consisted of 232 (48.3%) cases.[13] This was followed by children between 6 and 10 years. This observation is also similar to the study done by Mazumder et al who had 60% of cases in under 15 age group.[14] However, Mukara et al in their study observed that 78.4% cases belonged to 2 to 8 years age group.[15]

The present study has observed more number of female patients (114) when compared to males (86) out of the total 200 cases with a male to female ratio of 1:1.326. This observation is similar to the study of Mazumder et al who found male and female ratio of 1:1.28.[14] It is also in agreement with the studies of Ologe et al and Pandey.[16,17] However, this is in disagreement with the study of Tonga et al who in their study on 234 cases of aural foreign body found a male preponderance with a male to female ratio of 1.4:1.[18]

In this study, majority of the patients (104 out of 200) presented with a history of foreign body insertion in the ear, with the next common presenting symptom being foreign body sensation followed by pain hearing impairment, discharge, bleeding. In 10 cases, aural foreign body was an incidental finding. This finding is similar to the study of AgbomhekheOgah in which 132 (81.5%) patients presented asymptomatically with a history of foreign body insertion while otalgia was seen in 23 (14.2%), otorrhea in 4 (2.5%), bleeding in 2 (1.2%) and fever in 1 (0.6%) case out of the total 162 cases.[19]

The most common aural foreign body in our study was seeds of various vegetables and fruits seen in 60 out of the total 200 cases. The next common was cotton bud seen in 32 cases. Live insects were seen in 20 cases while 6 cases had dead insect remnants. Feathers/ feather remnants were seen in 15 cases and stones were seen in 10 cases. This is similar to the study of Chai et al.[13] in which seeds or nuts were the commonest ear foreign body found in 226 (47.1%) cases followed by plastic toys or beads. In a study by Ologe et al, grains and seeds (27.9%) followed by beads (19.7%) and cotton wool (13.6%) formed the bulk of the ear foreign bodies.[16] However, in a study by Tian-Tee Ng et al, insects were the most common aural foreign body and were removed from 77 (16.1%) patients.[20] In the study by Al-Juboori, beads were the commonest foreign body extracted from 68 patients (30.4%), cotton tips from 50 patients (22.3%), seeds and garlic were extracted from 31 patients (13.8%).[21] Both these studies are in disagreement with the present study.

In this study, in majority of the cases (98 out of 200) aural foreign bodies were removed without employing any anaesthesia. For very small children (37 out of 200) general anaesthesia was employed. Local anaesthesia was used 65 cases. Most of the cases (70%) were managed

with the help of headlight under direct vision. Endoscopic removal was done in 19% cases. Very few cases (11%) required removal under microscope. Jobson Horne's probe was used in (45% of cases), aural forceps (20%), ear suction (19%) and syringing (16%).

In a study by AgbomhekheOgah, most aural foreign bodies 154 (95.1%) were removed in the outpatient department without anesthesia using the headlight and Jobson Horne's probe or forceps or by syringing with warm saline.[19] In Eight patients (4.9%) general anaesthesia was employed. In the study by Almaamuri out of 232 patients, 228 patients (98.3%) were dealt with successfully in outpatient room while only four patients (1.7%) needed general anesthesia.[22] The study conducted by Mazumder et al, on 148 cases of aural foreign body had 92.89% (n=136) removed in office setting while 8.11% cases required general anesthesia.[14] Majority were removed by aural forcep or Jobson Horne's probe (65%), followed by sucker machine (30%) and syringing (5%). All these studies are in agreement with the present study.

In the present study, the per-meatal approach was used in majority of cases 195 (97.5%) while only 5 (2.5%) cases required a post aural approach to effectively remove the foreign body. The post aural approach was used for deep foreign bodies which have lodged through a perforation in tympanic membrane in unreachable middle ear space. This observation is similar to the study of Afolabi et al who have approached most of the foreign bodies through per-meatal approach 116 (98.3%) while only 2 (1.7%) had both per-meatal and post auricular approach under general anaesthesia.[23]

CONCLUSION

The child presenting with ear foreign body, although not an emergency, is often an anxious situation for the parents and should be diligently managed. Adults presenting with aural foreign body are less common and a psychiatric condition should always be looked into. Patients or parents in case of children give a history of foreign body but aural foreign bodies can also be an incidental finding and any complaint of aural fullness should be promptly examined. In this study, most common aural foreign body was seeds in children and cotton buds in adults. Bird feathers were observed to be a common foreign body particularly in the region of the study. Majority of the cases can be managed in the outpatient department itself without any anaesthesia. The use of general anesthesia is preferred in very young children and uncooperative patients. Live insects can be very distressing and must be killed prior to removal. Majority can be removed under direct vision of headlight with the help of simple instruments. The role of endoscope and microscope is relevant in medially placed foreign bodies and in cases with tympanic membrane perforation. Per-meatal approach is used to remove majority of the foreign bodies but the post aural approach should be considered for deep foreign bodies which have lodged through a perforation in tympanic membrane in to the unreachable middle ear space.

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