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To Study Presentation and Variation in Management of Foreign Bodies in the Ear in Paediatric Age Group

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Abstract

Objective: To analyze the spectrum of varied presentation and management of different foreign bodies in Ear presenting in tertiary centre of Ahmednagar district, Maharashtra. *Methods:* A cross sectional hospital based study was carried in tertiary center of a medical college, Department Of ENT over a period of 2 year. A data form was completed by the otolaryngology resident removing the foreign body. *Results:* Total of 330 patients were registered. The mean age of presentation was 7 years with max age 18 years and min of 1.5 years. This study comprises 149 (48.4%) males and 151(51.6%) females showing slight female preponderance. 143(43.3%) patients had foreign bodies in right ear, 180(54.5%) in left ear and 7(2.1%) in both ears. Most common foreign body seen was insect. *Conclusion:* Ear foreign bodies a simple and common ENT emergency may become complicated and so needs to be removed using standard methods which should be carried out by specialist.

Keywords: Ear Foreign Body; SMHS; ENT Emergency.

Introduction

Patients frequently present to the emergency department for removal of foreign bodies from the nose or ear. Foreign body (FB) insertion in to the external auditory canal (EAC) is not an uncommon event (Gregori *et al*., 2009). Children may insert FBs intentionally into their ears, due to utter curiosity, the wish to explore the orifices of the body, irritation caused by otalgia, attraction to small, round objects, or simply for fun (Balbani *et al*., 1998; Bressler and Shelton, 1993). Most patients present soon after insertion due to distress, but occasionally may be delayed for days when the asymptomatic child divulges the history or may be discovered incidentally on routine ear examination. Adults are prompted to insert objects into ear canal to clean or relieve itching. It may also be accidental as in case of the flying or house hold insects (Das, 1984; Alberto Chinski *et al*., 2011). Foreign bodies in the ear vary in their type from animate to inanimate. They cause significant worry in the parents and can lead to morbidity in terms of neglected foreign bodies. The external auditory canal (EAC) is the most common area where EFB are usually impacted followed by the middle ear and rarely the inner ear (Gregori *et al*., 2009; Balbani *et al*., 1998; Ryan *et al*., 2006). Patients with ear foreign bodies need proper clinical assessment using the headlight or otoscope or under microscope.

Removal of such foreign bodies requires knowledge of certain skills and techniques depending on its location whether in the external auditory canal, the middle ear or beyond. The most common complications of a foreign body in the ear are bleeding, fetidness and otitis externa. Inexperienced physicians tend to have a higher incidence of iatrogenic complications, including auditory canal laceration, bleeding, infection and perforation of the tympanic membrane or impaction within the middle ear cavity when such foreign bodies are inadvertently pushed farther while trying to remove them (Amjad and Abbas, 1999; Schulze *et al*., 2002; Baker, 1987).

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When the inner ear is involved, the clinical scenario of symptoms such as vertigo, nausea, vomiting, severe deafness may become more pronounced.

Materials and Methods

This prospective hospital based study was done at the department of ENT & Hospital which is a tertiary care hospital catering to needs of district. The data was collected based on a proforma which included, name, age, gender, laterality, mode of presentation, duration of foreign body retained, nature of the foreign body, way of insertion, method of removal, use of any anesthesia or restraint, reason for choosing anesthesia and the occurrence of any complications documentation of any hearing loss in follow up period.

Results

In this study spanning over two years a total of 330 foreign body cases were recorded and managed. The mean age of presentation was 7 years with max age 18 years and min of 1.5 years Table 1.

This study comprises 149(48.4%) males and 151 (51.6%) females showing slight female preponderance. 143(43.3%) patients had foreign bodies in right ear, 180(54.5%) in left ear and 7(2.1%) in both ears. A total of 170 patients in the age group of 2-8 years were recorded male : female ratio of 75:95, and 105 above 15 years of age and male : female ratio of 60:45 as shown in Fig. 1.

Children put varied types of foreign bodies with beads (35) as the most common foreign body. In adults insects and broken match sticks (28) were the most common foreign body identified. Table 3 provides a list of various foreign bodies retrieved. Different presentations are detailed in Table 2.

During study period 185(56.06%) of the foreign bodies presented in less than 24 hours and 120(34.5%) were after 24 hours; while duration of retained FB was unclear in 95(28.78%) patients. In adults 90% of the foreign bodies were accidental. 28 cases of insects were recorded and cockroaches as the most common. The method of removing foreign were different for different patients and depend son type of foreign body duration, age of patient and any prior failed attempts. Four instruments were utilized as detailed in Table 4.

In the majority of children the foreign body was put in the presence of an adult or was reported immediately by the child to the care giver. The average delay in presentation to hospital was 5 hours.

Table 1: Age range of patients with sex distribution

Age	Number (percentage)
0-1	44
1-3	126
4-5	55
5-6	30
6-7	26
7-8	12
8-10	5
10-12	11
12-14	9
14-16	7
16-18	4
>18	1

Table 2: Presentation of patients with foreign bodies

Presentation	Number	Frequency
Reported by	170	56.66%
Ear ache	35	11.66%
Pus discharge	25	8.33%
Fullness	65	21.66%
Incidental findings	35	11.66%

Table 3: Type of foreign body removedAge

S. No	Type of foreign body	number	Percentage (%)
1	Beads	35	10.6
2	Match Sticks	28	8.5
3	Cotton	38	11.5
4	Insects	35	10.60
5	Plastic Pieces	28	8.48
6	Paper	17	5.15
7	Seeds	25	7.57
8	Stones	15	4.54
9	Peas	17	5.1
10	Beans	15	4.54
11	Fabric	8	2.42
13	Raisin	3	0.9
14	Wood pieces	9	2.7
15	Eraser	10	3.0
16	Chalk	3	0.9
17	Grass	8	2.4
18	Toys	2	0.6
19	Wire	2	0.6
20	Hearing aid plug	4	1.2
21	Ear plugs	3	0.9
22	Earring	1	0.3
23	pen cover	2	0.6
24	screw, metal scrap	5	1.5
25	Puffs thermacol	9	2.7
26	Button battery	3	0.9
27	0ther	5	1.5

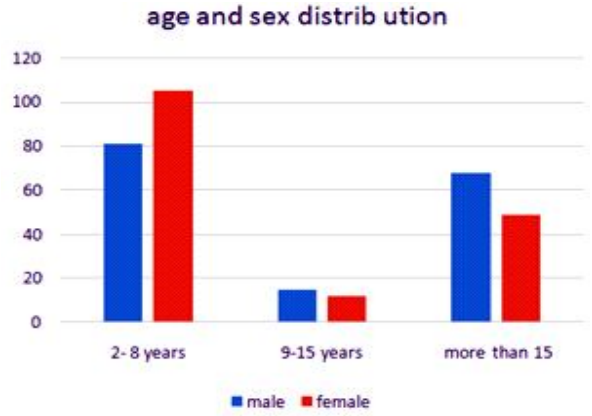

Fig. 1: Age and sex distribution Fig. 1.

Table 4: Method used for removing foreign body

Type used	Number	Complications
Jobson Hornes probe	83	27%
Syringing	71	23%
Crocodile forceps/cup forcep	50	16%
Hook	62	20%
Jobson probe + hook	28	9%

Table 5: Approach to EFB Removal under GA

Approach	Number 30	Type of foreign body
Endaural approach	2	Pebble .bead.
Meatal	23	Pebble , bead
Postsauricular	5	Pebble

Table 6: Type of Complication

Complication	No.
Tympanic membrane perforation	6
Trauma to external auditorycanal/bleeding	33
suppurative otitis media/otitis externa	6
Impaction in the middle ear cavity	4
Ossicular injury	1
Inner ear injury	0

Single instrument was used in 272(90.6%) patients while combination of modalities was utilized in (9%) patients. The most utilized single instrument in this study was Jobson Horne Probe, used in 83(27%) patients. Suction clearance was used to clean the canal of any wax, debris or wax as indicated. Effective restraint with the help of two assistants and cloth was utilized in 252 patients with foreign body removed under vision. In 48 adult patients removal under microscope was done. 30 patients were done under General anesthesia. Post aural trans cannal or endaural approach was utilized as given in Table 5. 50 patients developed some form of complications with laceration or bleeding from EAC in 33 (11%) patients. Six patients developed tympanic membrane perforation and damage to malleus was in 1 (.003%) patient. In our study no patient with foreign body in inner ear was documented no such complication did arise.

Discussion

Aural Foreign bodies represent a good percentage ENT emergencies the decision to remove foreign bodies and the method of removal depend on myriad factors based on foreign body criteria, patient criteria, and the surgeon criteria. Our hospital is a tertiary care center that caters to a huge rush of patients every day. In our study the decision was considered based on age of the patient, nature of foreign body, position of foreign body in aural canal, previous attempts at removal, duration of presentation and cooperation of patient for effective restraint and the experience of the surgeon.

In our study we recorded and managed a total of 330 cases of aural foreign body. 300 cases were effectively done by restraint method without any anesthesia and in 30 (9.09%) general anesthesia was required which is comparable to other published data (Gregori *et al*., 2009). The most common reason for GA was a foreign body impaction following delay in presentation, improper handling by non-professionals and cooperation of patient.

The patients in the age group of 8-14 were the most likely not to cooperate during restraint. Patients presented to the emergency department on average within 5 hours. Presentation was delayed in case of patents residing in rural areas and unawareness. Majority of patients in our study were children in the age group of 2-8 year, 186. 117 patients with age greater than 15 yrs were recorded. Children in the age group of 2-8 years are more likely to insert objects in body orifices due to curiosity, itching in ears or by other children while playing. Balbani *et al* 2 in his study concluded that younger children are more prone to insert foreign bodies, which are objects usually found at home. In our study we found ,in the age group of 2-8 years, the number of female children was significantly higher (male: female 81: 105).

Das (Schulze *et al*., 2002) 1984, in india in 1998 in a study on 233 aural foreign bodies found 60.9% cases to be male and only 30% female while a study by Chinski *et al*. (2011) in Argentina in 2009 on 392 foreign body cases fond it to be 50.5% males and 49.5% females. The difference could be explained on the ground that female children are more curious and active. The female children imitate their mother or elder siblings in putting ear rings into ear seems another plausible explanation in our setup. A similar history could be elicited from the parents of 5 female children in our study. The male: female ratio (68:49) reversed in the age group more than 15 years. Most of times foreign body is self-reported or reported by parents (170). The retrieved foreign bodies in our study were compared with other studies in literature. The predilection of certain foreign bodies to certain areas, certain social classes and certain age groups was found. Children from rural areas were more prone to insert wood and stones. The most common foreign body retrieved in our study was beads of various sizes (11.66%) and insects (11.66%) followed by cotton plugs (9.3%) and match sticks (9.33%). Beads were the most frequently retrieved foreign body in the studies of Amjad and Abbas (Pakistan) (Amjad and Abbas, 1999) 67%, Hons *et al* (Malysia) (Schulze *et al*., 2002) 39%, and Schulze *et al* (USA) (Baker, 1987) 15%. The most common insect removed was cockroach (21). 7%. People with cockroaches present most commonly between 3 to 6 AM.

Bakers and people who sleep in houses with mud floor were most commonly affected. In USA cockroaches were the most frequently retrieved foreign body in the studies of Baker (Ryan *et al*., 2006) and Bressler and Shelton 3 to be 51% and 44% respectively. The most common foreign bodies retrieved in children were beads and pieces of plastic and paper while in adults match sticks, cotton buds and insects were more common. Ryan *et al* (Tiago *et al*., 2006) in Australia retrieved most of the foreign bodies in adults to be the cotton wool tips of cotton buds (35%), which were used by general population for cleaning or itching of external auditory canal. The location and type of foreign body was ascertained by means of an otoscope or an operating microscope. Four types of instruments were utilized. The choice of instrument depended on the type and location of foreign body. Easily graspable objects like cotton wool, cloth, paper were removed using alligator forceps.

Tiago *et al* 11 removed 40.35% of foreign bodies with Alligator forceps, 31.6% with a curette and 14% with more than one method. By observing carefully, it is evident that though no particular method can be followed for the removal of a particular foreign body. As a general dictum rounded and smooth surfaced foreign bodies and those not occupying the whole of the circumference of the external auditory canal were mostly retrieved using aural syringe if small enough with no known contraindication to syringing; those occupying most of the circumference were extracted using Jobson Horne Probe, while being careful enough to be in the plane between the wall of the external auditory canal and the foreign body avoiding undue pressure over the external auditory canal so as to avoid its laceration. Beads with a hole could be removed by a novel technique of inserting a hook or a syringe needle with a bent tip carefully into the hole followed by gentle retrieval. Similarly, graspable foreign bodies were removed using aural crocodile forceps. The foreign bodies which could swell up with water, like seeds etc., water irrigation using aural syringe was avoided. Insects when encountered alive, first drowned by instilling liquid paraffin or wax softener and later removed by syringing or other means. Ear foreign body such as button battery which have alkaline substance when dissolved causes liquefactive necrosis and if left undetected could cause otitis externa, meatal stenosis, otitis media, facial nerve paralysis and deafness with attendant problems (Bressler, 1993). Such foreign bodies need to be removed as a matter of urgency.

Conclusion

The commonest foreign body in our part of the world where insects and beads among children and adults. We also conclude that the method of removal should be chosen depending on the type of foreign body and the state of external auditory canal. Although proper restraint with good magnification and illumination works in most cases for removal of foreign body, in selected cases general anesthesia is unavoidable to prevent complications.

References

1. Alberto Chinski, Francesca Foltran, Dario Gregori, Desiderio Passali, Luisa Bellussi. Foreign bodies in the ears in children: the experience of the Buenos Aires pediatric ORL clinic *The Turkish Journal of Pediatrics*. 2011; 53: 425-429.
2. Amjad, M. and Abbas, N., Foreign bodies in ear in children. *Pak Paed J.* 1999; 23(2): 61-2.
3. Baker, M.D., Foreign bodies of the ear and nose in childhood. Pediatr Emerg Care. 1987; 3: 67-70.
4. Balbani, A.P., Sanchez, T.G. and Butugan, O. *et al*. Ear and nose foreign body removal in children. *Int. J. Pediatr Otorhinolaryngol.* 1998; 46: 37-42.
5. Bressler K. and Shelton C., Ear foreign-body removal: a review of 98 consecutive cases. Laryngoscope. 1993; 103: 367-370.
6. Das S.K.,Aetiological evaluation of foreign bodies in the ear and nose. *J. Laryngol Otol.* 1984; 98: 989-991.
7. Gregori, D., Morra, B. and Berchialla, P. *et al.*, Foreign bodies in the ears causing complications and requiring hospitalization in children 0-14 age: results from the ESFBI study. Auris Nasus Larynx. 2009; 36: 7-1.
8. Hons SK, Izam TM, Koay CB, Razi A. A prospective evaluation of foreign bodies presenting to the ear, nose and throat clinic, Hospital Kuala Lumpur. Med J Malaysia. 2001; 56(4): 463-70.
9. Ryan, C., Ghosh, A., Wilson-Boyd, B., Smit, D.V. and O Leary, S. Aust, Presentation and management of aural foreign bodies in two Australian emergency departments. *Emerg Med. 2006;* 18(4): 372-8.
10. Schulze, S.L., Kerschner, J. and Beste, D., Pediatric external auditory canal foreign bodies. A review of 698 cases. *Otolaryngol Head Neck Surg.* 2002; 127: 73-8.
11. Tiago, R.S.L., Salgado, D.C., Correa, J.P., Pio, M.R.B. and Lambert, E.E. 2006. Foreign body in ear, nose and oropharynx: experience from a tertiary hospital. *Rev Bras Otorrhinolaryngol* (Engl Ed). 2006; 72(2): 177-81.