

Foreign bodies in the external auditory canal: A single center experience

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Abstract

Aim: The aim of our study is to determine the risky age groups, to investigate what kind of materials may pose a danger and the measures that can be taken to prevent it and to evaluate the findings in the light of the literature.

Materials and Methods: The medical records of patients diagnosed with foreign bodies in the external auditory canal admitted to Antalya Serik State Hospital Emergency Service or Ear-Nose and Throat (ENT) Clinic between January 2018 and December 2018 were retrospectively analyzed. Various parameters such as foreign bodies, age, sex, as well as clinical symptoms and treatment protocols were investigated, and these cases were discussed in the light of the literature.

Results: A total of 96 patients admitted to our hospital at the time of the study. Fifty-four of them were male (56.25%) and 42 were female patients (43.75%). The mean age was 24.13 years (11 months - 76 years). Foreign bodies were removed from the right ear in 58 cases (60.4%), from the left ear in 35 cases (36.4%), and from both ears in 3 cases (3.1%). Most of the patients were preschool children aged between 0-5 years (n = 46, 47.9%). This patient group was followed by the adult-age patient group, who were 16 years old or older (n = 27, 28.1%). The most common foreign bodies in children were small plastic pieces (84.2%) and granular foods (76.5%). In adults, cotton swabs were the most common (71.4%).

Conclusion: The presence of foreign bodies in the external auditory canal is a common problem in ENT diseases both in the pediatric group and in the adult group. Foreign bodies can cause complications even up to perforation in the ear. Parents should be made aware of not keeping small plastic pieces and granular foods near their children.

Keywords: Cotton swab; external auditory canal; foreign body

INTRODUCTION

Foreign bodies are common in ear, nose and throat (ENT) diseases and are an important problem faced by otolaryngologists urgently (1,2). When talking about foreign bodies in the ear, any object that should not be found in the ear should come to mind. There is no substance in the external ear canal other than cerumen. Foreign objects can be living or non-living matter. Foreign bodies in the ear are common in daily life all over the world, especially in children younger than five years. This situation stems from the child's inherent sense of curiosity and discovery (3,4). Most of the time, patients with foreign body in the ear are asymptomatic and noticed incidentally. They usually present with complaints including pain, hearing loss, and ear fullness. It can lead to complications such as otitis externa, suppurative otitis media and hearing loss (5).

The most common ear foreign bodies are small plastic toy pieces, granular foods, fruit seeds, cotton swabs, and insects. Cotton swabs are more common in the adult group over the age of 16. In the elderly patients, this is due

to itching of the external auditory canal and the patients scratching their ears with cotton swabs (6,7). The external auditory canal is a narrow canal made of cartilage and bony structure covered with a thin periosteum and skin layer. As the bone part is extremely sensitive, attempts to remove foreign bodies can be painful.

There are many techniques available to remove foreign bodies from the ear, and the choice depends on the clinical situation, the suspected foreign body type, and the experience of the physician. The most common technique is ear aspiration. Ear lavage is performed less frequently. Alligator forceps is the most frequently used foreign body removal apparatus. Live insects are killed by dropping alcohol into the ear canal and are then removed. This technique should not be performed if there is perforation in the tympanic membrane, laceration or infection in the external auditory canal (8). Most of the patients refer to otolaryngologists after unsuccessful removal attempts. Treatment is usually done in an outpatient clinic. Rarely, depending on localization and patient incompatibility,

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foreign body is removed under anesthesia in operating room conditions (9). While trying to remove the foreign body from the external ear canal by untrained people or with unsuitable tools, the foreign body may proceed to the middle ear. In this case, symptoms such as vertigo, nausea, vomiting, and hearing loss may occur in the patient. In such cases, patient should be treated under sedation. The aim of this study is to determine the risky age groups, to investigate and evaluate what kind of materials may pose a danger and the measures that can be taken to prevent it.

MATERIALS and METHODS

The study was approved by Akdeniz University Faculty of Medicine Clinical Research Ethics Committee. The files and clinical records of the patients who admitted to Antalya Serik State Hospital Emergency Service or ENT clinic between January 2018 and December 2018 and diagnosed with foreign body in the external auditory canal were retrospectively reviewed. Foreign bodies were investigated in terms of clinical symptoms and treatment protocols as well as various parameters such as age, gender, type of foreign body, complications, and the cases were discussed in the light of the literature. Patients who admitted to the pediatric clinic and whose treatment was completed there, and patients with chronic otitis media were excluded from the study.

RESULTS

A total of 96 patients applied to our hospital during the time of the study and 54 of them were male (56.25%) and 42 were female (43.75%). The mean age was 24.13 years (11 months-76 years). Foreign bodies were removed from the right ear in 58 (60.4%), from the left ear in 35 (36.4%), and from both ears in 3 (3.1%) of these patients. Beads and derivative foreign bodies were seen at a higher rate in women compared to men (n = 7, 63.6%). All other foreign body materials were observed at a higher rate in males than females (Table 1).

Table 1. Distribution of foreign objects according to gender

Origin	Male n (%)	Female n (%)	Total n (%)
Small plastic pieces	11 (57.9)	8 (42.1)	19 (19.8)
Grain foods and fruit seeds	9 (52.9)	8 (47.1)	17 (17.7)
Insects	9 (60.0)	6 (40.0)	15 (15.6)
Beads	4 (36.4)	7 (63.6)	11 (11.5)
Grass and straw pieces	6 (75.0)	2 (25.0)	8 (8.4)
Cotton swabs	4 (57.1)	3 (42.9)	7 (7.3)
Sand and rock pieces	4 (57.1)	3 (42.9)	7 (7.3)
Matchstick	3 (60.0)	2 (40.0)	5 (5.2)
Pencil tip	2 (50.0)	2 (50.0)	4 (4.1)
Others	2 (66.7)	1 (33.3)	3 (3.1)
Total	54 (56.25)	42 (43.75)	96 (100)

The majority of the patients were between 0-5 years old, preschool children (n= 46, 47.9%) and they followed by the adult patient group, who were 16 years old or older (n =27, 28.1%). There was a smaller proportion of the group of patients who were between 6 and 15 years old (n = 23, 23.9%). The most common foreign bodies encountered in children were small plastic pieces (84.2%) and grain foods (76.5%). In the adults, most common foreign bodies were cotton swabs and matchsticks (71.4% and 60%, respectively). It has been observed that elderly patients use such materials for ear scratching. In adults, insects (53.4%) and grass and straw pieces (37.5%) were also common foreign bodies (Table 2).

Two cases presented laceration of the tympanic membrane, hemorrhage in the external auditory canal, external otitis, and tympanic membrane perforation in our study. None of our patients were intervened under

Table 2. Distribution of foreign objects according to age

Origin	Pre-school 0 - 5 years; n (%)	School period 5 - 16 years; n (%)	Adult period 16 years and above; n (%)	Total n (%)
Small plastic pieces	16 (84.2)	2 (10.6)	1 (5.2)	19 (19.8)
Grain foods and fruit seeds	13 (76.5)	3 (17.6)	1 (5.9)	17 (17.7)
Insects	2 (13.3)	5 (33.3)	8 (53.4)	15 (15.6)
Beads	6 (54.5)	2 (18.2)	3 (27.3)	11 (11.5)
Grass and straw pieces	2 (25.0)	3 (37.5)	3 (37.5)	8 (8.4)
Cotton swabs	0 (0.0)	2 (28.6)	5 (71.4)	7 (7.3)
Sand and rock pieces	4 (57.1)	1 (14.3)	2 (28.6)	7 (7.3)
Matchstick	0 (0.0)	2 (40.0)	3 (60.0)	5 (5.2)
Pencil tip	1 (25.0)	2 (50.0)	1 (25.0)	4 (4.1)
Others	2 (66.7)	1 (33.3)	0 (0.0)	3 (3.1)
Total	46 (47.9)	23 (23.9)	27 (28.1)	96 (100)

general anesthesia. However, Minimal ketamine sedation was used in three uncooperative and unstable children to facilitate the removal of the foreign body. Local antibiotic-steroid treatment was performed in cases with external auditory canal traumatization.

DISCUSSION

Children usually try to explore anatomical cavities such as ears, nose and throat in their bodies during playtime. External auditory canal foreign bodies usually occur in early childhood as a result of children putting objects in their ears with curiosity. Therefore, children should be carefully monitored and periodic ear examinations should be performed to detect the presence of foreign bodies in the ear (10). In addition, since more than one foreign body can be encountered in children, the nasal cavity and throat should be checked along with the ear. Patients diagnosed with foreign bodies in the external auditory canal usually admit to the emergency room or the ENT clinic with a history of foreign body intrusion into the ear. Generally, these patients' complaints are pain, blood in the ear or hearing loss (11). External auditory canal foreign bodies are common in adults as they are children (12). Most of the patients in the adult age group think that using cotton swabs is effective in cleaning the ear. Conductive hearing loss occurs in these patients as a result of pushing the stuck cerumen into the outer ear canal due to the chronic use of cotton swabs or similar materials, or forgetting the cotton swabs in the external auditory canal, and as a result, patients consult a doctor with the complaint of hearing loss (13). Ear foreign bodies can cause various complications such as external otitis, otitis media, eardrum perforation, but are generally not life threatening (6,14).

External auditory canal foreign bodies are more common in the right ear at a rate of 60.4% in our study. In the literature, external auditory canal foreign bodies are more common in the right ear (6). We attributed this to individuals using more right hand dominantly. In 3.1% of our cases, foreign bodies were encountered in both ears. Thompson et al. indicated in their studies that foreign bodies appear equally in both ears in their study (12). In our study, foreign bodies were observed more frequently in men (56.25%). However, there are studies showing that it is more common in women (7). In this study, the cases were grouped according to their age as 0-5 years (preschool period), 6-15 years (school period) and 16 years and above (adult period). The most common foreign bodies in the external auditory canal in the 0-5 age group of patients are small plastic pieces (84.2%) and granular foods and small fruit seeds (76.5%). In the 6-15 age group, the pencil tip was the most common (50%), followed by grass and its parts. In the adult age group (aged 16 years and over), cotton swab was the most common (71.4%), followed by matchstick (60%). Singh et al. reported in a large-scale retrospective study that the most common foreign bodies were seeds, plastic toy pieces, cotton,

insects and beads (15). In addition, Ilhan et al. reported that external auditory canal foreign bodies were mostly beads, seeds and plastic pieces in children, and bugs and cotton swabs in adults (16).

While examining the patient files, we found that the records were incomplete. It is important to record the foreign bodies that are removed. It is important to plan both preventive and intervention measures. Moreover, it should be kept in mind that every conceivable object can be placed in the ear. Different types of foreign bodies from different parts of the world are present in the literature (17,18). The removal of external auditory canal foreign bodies is not difficult if performed by a specialist (19). Of course, it may not be possible to remove all ear foreign bodies by otolaryngologists, but parents, relatives or untrained healthcare professionals should not try to remove the foreign body. The trained healthcare professional should also know where to stop while removing the foreign body. The external auditory canal narrows at the junction of the bone cartilage. Attempts to remove the foreign body push it further into the canal and it becomes difficult to remove. Perforation of the eardrum may occur during removal attempts by the patient himself / herself or by non-specialists (20).

If the foreign body is not removed from the ear, more serious complications such as tympanic membrane perforation, ossicular chain damage, inner ear dysfunction or cerebral abscess may occur. Tympanic membrane perforation can lead to serious complications, and treatment under general anesthesia may be required. Generally, while removing the foreign body, lavage, aspiration, and withdrawal techniques with alligator forceps are used. Foreign body removal techniques vary according to foreign body types. Small live foreign bodies can be removed by irrigation, while large and mobile ones can be removed after being killed with alcohol and lidocaine (21). Foreign bodies with plant origin should not be lavaged, otherwise they will swell and cause further pain and discomfort. It is more convenient to remove them with forceps or a plug curette.

CONCLUSION

The presence of foreign bodies in the external auditory canal is a common problem in otolaryngology, both in the pediatric group and in the adult group. Foreign bodies can cause complications even perforation in the ear. In terms of preventing complications, it is appropriate to consult an otolaryngologist to remove the external auditory canal foreign bodies that cannot be easily removed. Parents should be made aware that children do not have small plastic pieces and granular foods with them. Foreign objects that pose such a danger should be removed from the environment where children are present. Warning notices should be written on plastic toys indicating that they may be dangerous for younger age groups.

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