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ORIGINAL ARTICLE

Evaluation of Pediatric Patients with Foreign Body in External Auditory Canal

Dış Kulak Yolunda Yabancı Cisim Bulunan Çocuk Hastaların Değerlendirilmesi

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ABSTRACT

Aim: The aim of this study is to investigate the demographic characteristics, foreign body (FB) types, treatment approaches and complications of pediatric patients with FB detected in the external ear canal.
Methods: The files of pediatric patients who were found to have FBs in the external auditory canal by ENT specialists between December 2020 and February 2022 were retrospectively reviewed. The age, gender, type of FBs, treatment methods and complications of the patients were recorded.
Results: A total of 108 patients (66 male (61.1%) and 42 female (38.9%) patients) with FB detected in the external ear canal were included in the study. The patients' ages ranged from 1 to 17 years and the median age was 5.0 (4.0) years. FBs were detected in the right ear in 64 (59.3%) patients, in the left ear in 41 (38.0%) patients, and in both ears in 3 (2.8%) patients. The most common FBs were beads (31.5%), insects (9.3%), pencil tips (8.3%) and cotton (8.3%). Complications were observed in 9.3% of the cases. FBs were removed under outpatient conditions in 100 (92.6%) patients, while they were removed under general anesthesia in 8 (7.4%) patients.
Conclusion: FBs in the external ear canal were frequently seen in children aged 5 years and younger. Most of the FBs consisted of inorganic materials such as beads. In order to avoid complications, especially in the presence of a round and hard FB that cannot be removed with simple applications, consultation from an ENT specialist should be requested.

Keywords: Children, external auditory canal, foreign body, bead.

ÖZ

Amaç: Bu çalışmada dış kulak yolunda yabancı cisim (YC) saptanan hastaların demografik özellikleri, YC tipleri, tedavi yaklaşımları ve komplikasyonların araştırılması amaçlandı.
Yöntemler: Aralık 2020 ve Şubat 2022 tarihleri arasında KBB uzmanları tarafından dış kulak yolunda YC saptanan çocuk hastaların dosyaları retrospektif olarak incelendi. Hastaların yaşı, cinsiyeti, YC'lerin türü, tedavi yöntemleri ve komplikasyonlar kaydedildi.
Bulgular: Dış kulak yolunda YC saptanan 66'sı erkek (% 61,1), 42'si kız (% 38,9) 108 hasta çalışmaya alındı. Hastaların yaşları 1 - 17 yıl arasında ve medyan yaşı 5.0 (4.0) yıl idi. Altmış dört (% 59.3) hastada sağ kulakta, 41 (% 38.0) hastada sol kulakta, 3 (% 2.8) hastada her iki kulakta YC saptandı. YC'lerin en sık görülenleri boncuk (% 31.5), böcek (% 9.3), kalem ucu (%8.3) ve pamuk (% 8.3) idi. Olguların % 9.3'ünde komplikasyon gözlendi. YC'ler, 100 (% 92.6) hastada poliklinik şartlarında çıkarılırken 8 (%7.4) hastada genel anestezi altında çıkarıldı.
Sonuç: Dış kulak yolunda YC'leri sıklıkla 5 yaş ve altı çocuklarda görüldü. YC'lerin çoğunluğunu boncuk gibi inorganik maddeler oluşturmaktaydı. Basit uygulamalarla çıkarılamayan özellikle yuvarlak ve sert YC varlığında komplikasyonlardan kaçınmak için KBB uzmanından konsültasyon istenmelidir.

Anahtar Sözcükler: Çocuk, dış kulak yolu, yabancı cisim, boncuk.

Introduction

Children tend to bring objects to their mouth, nose, and ears. Therefore, foreign body (FB) impaction can be found in such areas. FBs are most commonly reported in the ear. It has also been reported in the nose, oropharynx, larynx, and bronchi. (1) Patients with a FB in the ear may also have complaints of hearing loss, tinnitus, otalgia and otorrhea. (2) Grains and seeds, beads, pieces of paper, cotton swabs, plastic toy pieces, and insects are the most commonly reported FBs in children's ears. (1-5)

The FB removal from the ear is usually performed on outpatient clinics, but rarely requires general anesthesia. FBs in the ear are important because of the possible complication of severe hearing loss (6). The most frequently reported complications in the ear due to FBs in the literature are abrasion/rupture and bleeding (2,4).

The aim of this study is to determine the demographic characteristics of patients with FB in the ear, the type and location of FBs, treatment approaches and complications.

Patients and Method

The files of pediatric patients who were found to have FB in the external auditory canal (EAC) by otolaryngologists between December 2020 and February 2022 in the Konya City Hospital were retrospectively analyzed. The age and gender of the patients, type and location of the FB, treatment method, and complications were

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recorded. The diagnosis of FB in the ear was made by otoscopic or endoscopic examination.

Approval of Health Sciences University Hamidiye Scientific Research Ethics Committee (Date: 13 May 2022, number: 13/36) was obtained for the study. The study was conducted according to the principles of Helsinki Declaration. Informed consent form was not used as the study was conducted retrospectively from the patient files.

Statistical Analysis; Descriptive statistical analyses were used. Normality test was used to determine data distribution. Normally distributed data were given as mean ± standard deviation and non-normally distributed data were given as median (interquartile range). Categorical variables were represented as number (n) and percentage (%). Statistical Package for Social Sciences (SPSS) Windows software (ver. 22; IBM SPSS, Chicago, USA) was employed for all statistical analyses.

Results

Of the 108 patients included in the study, 66 (61.1%) were male and 42 (38.9%) were female. The ages of the patients ranged from 1 year to 17 years, with a median age of 5.0 (4.0) years. 64 (59.3%) of the patients were aged ≤5 years, 28 (25.9%) were aged between 6 and 11 years, and 16 (4.8%) were aged ≥12 years. Table 1 shows the distribution of the patients with FB in the EAC according to their demographic characteristics.

Table 1. Distribution of the patients with foreign body in the external auditory canal according to their demographic characteristics, foreign body location, treatment method and complication status

Parameters		n = 108
Gender, n (%)		
	Female	42 (38.9)
	Male	66 (61.1)
Age (year)		5.0 (4.0)
Age groups, n (%)		
	≤5 yıl	64 (59.3)
	6-11 yıl	28 (25.9)
	≥12 yıl	16 (14.8)
Foreign body location		
	Right ear	64 (59.3)
	Left ear	41 (38.0)
	Both ears	3 (2.8)
Treatment method		
	Ambulatory condition	100 (92.6)
	Under general anestesia	8 (7.4)
Complication status		
	None	98 (90.7)
	Abrasion or laceration	5 (4.6)
	Bleeding	3 (2.8)
	Tympanic membrane perforation	2 (1.9)

Parameters were expressed as n (%) and median (interquartel range).

The FB was detected in the right ear of 64 (59.3%) patients, in the left ear of 41 patients (38.0%), and both ears of 3 (2.8%) patients. While FBs were removed by using an alligator forceps, curette, or aspirator in 100 (92.6%) patients under the ambulatory conditions, they were removed under general anesthesia in 8 (7.4%) patients. Of 8 patients intervened under general anesthesia, 5 (4.6%) were 5 years old and younger, and 3 (2.8%) were in the age group of 6-11 years. Four (3.7%) of FBs removed under general anesthesia were beads, one (0.9%) was stone, one (0.9%) was corn kernel, one (0.9%) was sunflower seed, and one (0.9%) was pencil tip, all of which were hard to grasp. After the treatment, the complication of abrasion or laceration in the EAC was detected in 5 (4.6%) patients, bleeding in the ear in 3 (2.8%) patients, and tympanic membrane perforation in 2 (1.9%) patients. Table 1 shows the distribution of the patients with FB in the EAC according to their demographic characteristics, foreign body location, treatment method and complication status.

Of the foreign bodies removed from the ear, 81 (75.0%) were inorganic and 27 (25.0%) were organic materials. The most common FBs seen in the EAC were beads in 34 (31.5%) patients, insects in 10 (9.3%) patients, cotton in 9 (8.3%) patients, and pencil tip in 9 (8.3%) patients. Two earrings were removed from the right EAC in one patient. Table 2 shows the distribution of the FBs removed according to their types. An endoscopic view of a weed and a plastic object in the ear is shown in figures 1 and 2.

Tablo 2. Distribution of the extracted foreign bodies according to their types

Inorganic matters (n = 81)		Organic matters (n = 27)	
Bead	34 (31.5)	Insect	10 (9.3)
Cotton	9 (8.3)	Sunflower seed	3 (2.8)
Pencil tip	9 (11.1)	Bean grain	3 (2.8)
Plastic objects	7 (6.5)	Weed	2 (1.9)
Napkin	5 (4.6)	Watermelon seed	2 (1.9)
Paper	4 (3.7)	Popcorn seed	1 (0.9)
Stone	4 (3.7)	Wheat grain	1 (0.9)
Earring	1 (0.9)	Seed	1 (0.9)
Button	1 (0.9)	Bread	1 (0.9)
Battery	1 (0.9)	Noodle	1 (0.9)
Metallic object	1 (0.9)	Hair	1 (0.9)
Play dough	1 (0.9)	Rice grain	1 (0.9)
Eraser	1 (0.9)		
Tooth	1 (0.9)		
Silicone object	1 (0.9)		
Pin	1 (0.9)		

Parameters were expressed as n (%).

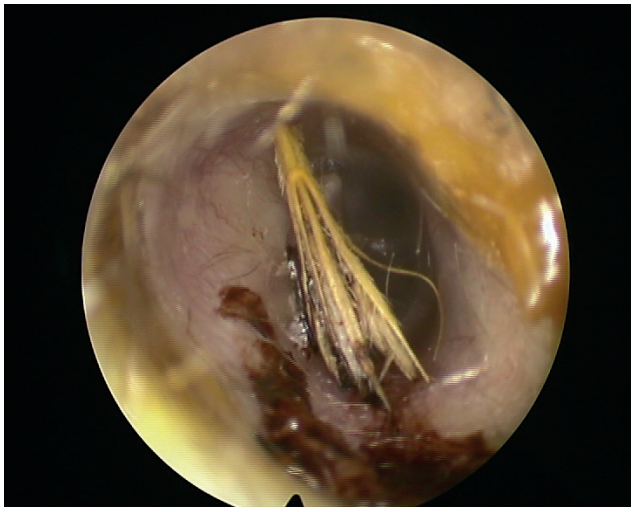

Figure 1 : Foreign body weed in the external auditory canal

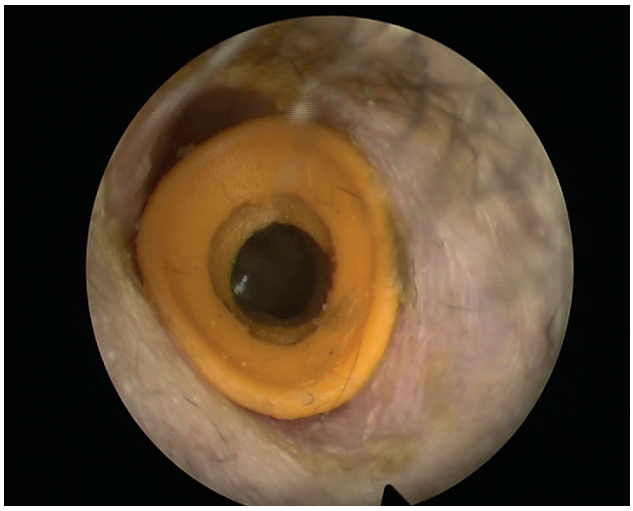

Figure 2 : Foreign body plastic object in the external auditory canal

Discussion

The FB in the ear in children is one of the most common reasons for admission to otolaryngology clinics. There are conflicting results in the literature regarding the age groups in which FBs are seen in the ear of children. However, it has been reported that it is most common in the 0-5 age group. (2,7,8) Olajuyin and Olatunga (6) reported that 109 (80.2%) of 136 patients with FB in the ear were under the age of 8 years. Also, Kim et al. (9) reported that FBs in the ear are mostly seen in the 5-9 age group. In this study, 59.3% of the patients were children aged 5 years and younger. Many studies have shown that FBs in the ear are more common in boys. (2,5,6,10) The male-female ratio has been reported between 1.2:1% and 1.8:1%. (2.6) In our study, 61.1% of the patients were male.

It is reported that FBs in the EAC were frequently seen in the right ear of children. (2,6) Incidence of FB in both ears is about 2-14%. (11) Bowles et al. (11), highlighted the necessity of contralateral ear examination due to the frequency of bilateral FB in the ear due to the fact that it can remain asymptomatic. In the present study, FB was seen in the right ear in 59.3% of the patients; whereas it was found in both ears of 2.8%. Findings of the present study are compatible with the literature. In one patient, two FBs were found in the same ear. The possibility of a second FB on the same or contralateral side should not be ruled out after removal of the FB in patients.

There are different reports about the types of FBs seen in the ear in children. Karimnejad et al. (10) found in their study that the most common FB in the external ear canal of children was bead. In the study of Schulze et al. (5), the majority of FBs found in children's ears are beads, pieces of paper, corn kernels and insects. In the study conducted by Grace et al. (2), the most common FBs removed from the ears of 157 pediatric patients were beads (37.6%), paper (15.9%), cotton (12.7%), seeds (10.8%) and stone (8.9%). Yegin et al. (12), detected mostly beads (58.9%) and plastic toy pieces (22.5%) in the age group of 0-6 years, sharp objects (29.5%), beads (27.3%), and tip of cotton swab (18.2%) in the age group of 7-15 years. In the present study, FBs found in the EAC were beads at a rate of 31.5%, insects 9.3%, pencil tips 8.3%, and cotton 8.3%.

The diagnosis of FB in the ear is established via otoscopic or microscopic examination. In the treatment, the aim is to remove the FB in the ear without causing any complications. Method of removal of FB varies depending on shape of FB, its location, type (organic or inorganic), patient compliance, and experiences of person performing intervention. The tools used can be alligator forceps, curette, hook, aspirator, and irrigation. (5,2) If tympanic membrane perforation is present, irrigation is not preferred when button cell and hydroscopic organic materials are detected. (11) Intervention under general anesthesia is rarely required. Ansley and Cunningham (3) reported that general anesthesia is required for very young children and FBs whose contour, composition or location predispose to traumatic removal in the ambulatory setting. In their study, Olajuyin et al. (6) used general anesthesia in 25% of the patients, while Grace et al. (2) used general anesthesia in 4.5% of the patients. In the present study, 7.4% of the patients underwent intervention under general anesthesia. Five of 8 patients for whom general anesthesia was preferred were 5 years old and under, and additionally the removed FBs were the objects that can be difficult to grasp such as beads, stones, and corn kernel.

Complications may occur due to the FB itself or the removal attempt of the FB in the ear. Possible complications include bleeding in the ear, abrasion of the EAC, laceration, tympanic membrane perforation, external otitis, ossicular injury, and hearing loss. (6,13) Most frequently reported complications in ear FBs were abrasion or laceration and bleeding. (2,4,6) In their study, Grace et al. (2) reported that the complications were bleeding in the canal (3.8%) and canal abrasion or laceration (2.5%). Schulze et al. (5) reported that the rate complication caused by spherical objects, contacting the eardrum, and staying in the canal for

more than 24 hours was higher. Complication rates are reported to be lower in the patients treated by otolaryngologists. (6,10,14) Karimnejad et al. (10) reported that agitation, irritation, bleeding and laceration complications were more common in the patients who were intervened in the emergency department and recommended referral to an ENT specialist if the FB in the ear is spherical or there is an unsuccessful removal attempt. Olajuyin and Olatunya (6) detected that the most serious complications were related to the FBs with difficult catching and recommended referral to an ENT specialist in the single hearing ear and after an unsuccessful removal attempt. In the present study, abrasion/laceration (4.6%), bleeding in the air (2.8%) and tympanic membrane perforation (1.9%) complications were observed.

Conclusion

Ear FBs were most common in the ≤5 age group. Most of the FBs were inorganic materials such as beads. Consultation should be requested from an ENT specialist in order to avoid complications, especially in round and solid FBs that cannot be removed by simple procedures. After removing the FB from the EAC, the possibility of a second FB on the same or opposite side should be kept in mind.

References

1.Zewdu D, Wondwosen M, Chufamo M, Eanga S, Aga A, Ewnte B, vd. The practice of foreign body removal from the ear, nose, and upper esophageal in children in Ethiopia: A retrospective descriptive study. Laryngoscope Investig Otolaryngol. Aralık 2021;6(6):1316-20.

2.Grace A, Francis P, Mgbe R, Offiong M, Enyuma CN, Umana A. Aural foreign bodies in children. Niger J Med. 2020;29(2):269.

3.Ansley JF, Cunningham MJ. Treatment of aural foreign bodies in children. Pediatrics. Nisan 1998;101(4 Pt 1):638-41.

4.Ologe FE, Dunmade AD, Afolabi OA. Aural foreign bodies in children. Indian J Pediatr. Ağustos 2007;74(8):755-8.

5.Schulze SL, Kerschner J, Beste D. Pediatric external auditory canal foreign bodies: a review of 698 cases. Otolaryngol--Head Neck Surg Off J Am Acad Otolaryngol-Head Neck Surg. Temmuz 2002;127(1):73-8.

6.Olajuyin O, Olatunya OS. Aural foreign body extraction in children: a double-edged sword. Pan Afr Med J. 2015;20:186.

7.Mishra A, Shukla GK, Bhatia N. Aural foreign bodies. Indian J Pediatr. Nisan 2000;67(4):267-9.

8.Yadav R, Yadav D. Foreign Bodies in Ear: A Descriptive Study. Indian J Otolaryngol Head Neck Surg. 2021;

9.Kim KH, Chung JH, Byun H, Zheng T, Jeong JH, Lee SH. Clinical Characteristics of External Auditory Canal Foreign Bodies in Children and Adolescents. Ear Nose Throat J. Aralık 2020;99(10):648-53.

10.Karimnejad K, Nelson EJ, Rohde RL, Costa DJ. External Auditory Canal Foreign Body Extraction Outcomes. Ann Otol Rhinol Laryngol. 01 Kasım 2017;126(11):755-61.

11.Bowles PF, Turrell C, Das P. Bilateral aural foreign bodies. Aust Fam Physician. Nisan 2016;45(4):200-1.

12.Yegin Y, Çelik M, Olgun B, Şimşek BM, Altıntaş A, Kayhan FT. Evaluation of patients with external auditory canal foreign body. Kocaeli Med J. 2017;6(1):45-51.

13.Tonga NL, Modu A, Dajam D. Aural foreign bodies encountered in a Tertiary Health Facility Bingham University Teaching Hospital Jos. Jos J Med. 2019;13(2):79-83.

14.Fasunla AJ, Ogunleye OOA, Ijaduola TGA. Healthcare givers' skill and foreign bodies in the ears of children in the tropics. Int J Pediatr Otorhinolaryngol. Şubat 2007;71(2):191-5.