

Foreign Bodies in the Ear in Children

Khader J. Abdul-Baqi*, MD, PhD, Qasim A. Khader, MD

ENT Departments, Faculty of Medicine- Jordan University Hospital
& Zarqa Hospital

Abstract

Objectives: The aim of this study is to investigate the causes behind the insertion of foreign bodies in the ear of children and to highlight the importance of radiological, audiological, and tympanometric evaluation.

Methods: This study was performed on 50 children, 29 males and 21 females with history of foreign body in the ear. Full physical and ENT examination was performed before and after removal of foreign body. Radiological, audiological and tympanometric testing were performed. This study was performed between January 2001 and January 2002.

Results: Our study showed that the insertion of foreign bodies is associated with ear diseases: otitis media with effusion (48%), acute otitis media (14%), wax (12%), chronic suppurative otitis media (10%), others (6%) and no finding (10%).

Conclusions: Irritative ear diseases are major etiological factors in aural foreign bodies in children. Radiological, audiological and tympanometric evaluation of children with aural foreign bodies are highly recommended in order to diagnose and treat the underlying diseases and prevent and reduce the incidence of further aural foreign bodies insertion.

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Foreign bodies, ear, children.

Introduction

Foreign bodies in the ear are considered a common and typical childhood problem.^{3, 6} The highest incidence of aural foreign body is found mostly in the age group 2-4 years³ many children with aural foreign body have irritative underlying aural diseases. These diseases are considered as stimuli for self-introduction of the foreign body into the ear.³ Ansley and Cunningham (1998)¹ reported that beads, plastic toys, pebbles, and insects were the most common foreign bodies among the 27 different objects found in the ears of children.

The aim of this study was to evaluate the causes of foreign bodies in the ear in Jordanian children and to highlight the importance of radiological, audiological, and tympanometric evaluation.

Materials and Methods

We studied 50 children (29 males and 21 females), aged 1.5 -12 years (mean 4.9), who came to the ENT or to the emergency room of Zarqa Hospital (Jordan), during the period from January 2001 to January 2002 (one year). Children were brought by their anxious and worried parents or relatives, believing that the foreign body might migrate to other vital structures like the brain or larynx. Name, age, sex, time of insertion (duration) of foreign body and which ear have been recorded. A detailed and careful relevant history was taken from parents or relatives. Physical examination of the ear was performed by careful inspection of the ear before and after removal of the foreign body. Nose and throat were also inspected.

Radiography of the post nasal space and temporal bone revealed adenoid enlargement and narrowing of nasopharynx in 24, opacity of the mastoid air cells in 4 and deviated nasal septum in 2 children. All children were referred to Jordan University Hospital for audiological and

Correspondence should be addressed to:

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Khader J. Abdul-Baqi MD, PhD
University of Jordan P.O. Box 13001, Amman 11942 Jordan
Email: kabaqi@msn.com.

tympanometric evaluation. Audiometry was performed in a sound proof room with an Interacoustic clinical audiometer (model AC5) properly and according to age.

Tympanometry was performed with an Interacoustic tympanometer (model AT2). Results showed bilateral Conductive Hearing Loss (CHL) in 20 children and unilateral CHL in 4 children due to Otitis Media with Effusion (OME) proved by flat tympanogram.

Removal of foreign bodies was performed without difficulties except in 3 cases in which general anaesthesia was needed. One of these 3 children was non-cooperative, the second child had an impacted spherical foreign body, and the third child had an impacted disc battery. The removal was accomplished by syringing (irrigation) of the ear or by using a hook placed behind the foreign body and pulled out or by alligator forceps at the time of diagnosis. Irrigation was avoided in hygroscopic foreign bodies because they have the potential to swell and make removal difficult, and in disc battery because of the possibility of alkali leakage and electrolysis.

Results

The gender and age distribution are shown in (table I) and (figure. 1). The peak incidence of aural foreign body insertion was found in the age group 2-4 years in 25 patients (50 %) followed by the age group 4-6 years in 12 patients (24 %), the age group 6-8 years in 6 patients (12 %), the age group 8-10 in 4 patients (8 %), and 3 patients (6 %), in the age group 10-12 years showing a gradual decreasing incidence with age .

Table (II) shows that plastic toys and pencil leads were the most common (18 % each) among the 12 different types encountered followed by beads, erasers and seeds (14 % , 12 % , and 10 % , respectively) , and other types (28 %). The median time since insertion of the foreign body was 24 hours (range 2 hours to 5 days).

Table (III) shows the distribution of findings (underlying diseases) with gender. The results of this study showed that the underlying diseases or conditions with the insertion

of a foreign body in the ear were as follows (in hierarchical order): OME in 24 children (48 %), Acute Otitis Media (AOM) in 7 (14 %), wax in 6 (12 %), Chronic Suppurative Otitis Media (CSOM) in 5 (10 %), no findings in 4 (8 %), inserted by another person in 2 (4%), insect (fly) in one (2%), and mental retardation in one (2 %).

In addition, the insertion of a foreign body in the right ear was seen in 26 children (52 %), and in the left ear in 24 (48 %).

Table I- Distribution of patients according to age and gender.

Age in years	Male(%)	Female(%)	Total (%)
2 - 4	14 (28)	11 (22)	25(50)
4 - 6	7 (14)	5 (10)	12(24)
6 - 8	4 (8)	2 (4)	6(12)
8- 10	2 (4)	2 (4)	4(8)
10 - 12	2 (4)	1 (2)	3(6)
Total	29 (58)	21 (42)	50(100)

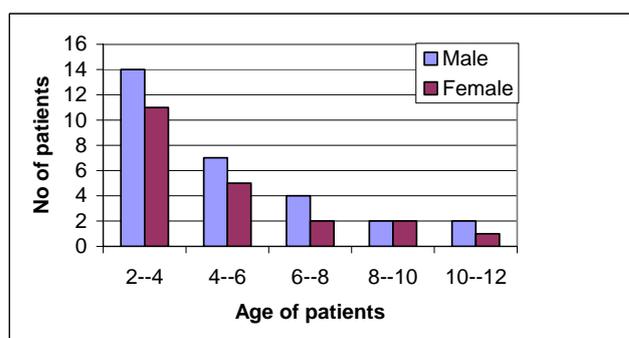


Figure 1: Distribution of patients according to age and gender.

Table II: Types and numbers of foreign bodies.

Type	No (%)
Plastic toys	9 (18)
Pencil leads	9 (18)
Beads	7 (14)
Erasers	6 (12)
Seeds	5 (10)
Q-tip cotton	3 (6)
Metal object	3 (6)
Stones	2 (4)
Crayon	2 (4)
Paper tissue	2 (4)
Watch battery	1 (2)
Insect	1 (2)
Total	50 (100)

Discussion

Foreign bodies in the ear are usually diagnosed when the child is old enough to speak about the presence of the object in his ear. In younger children otalgia, otorrhea, and pulling and scratching the ear are usually the manifestations of the presence of a foreign body, or the insertion of a foreign body has been witnessed by adults. Some authors reported persistent cough and hiccups caused by the presence of foreign bodies in the external auditory canal.^{4,5}

Foreign bodies are believed to be a result of child's natural curiosity and willingness to explore their body cavities,² or a result of irritative underlying aural diseases acting as stimuli for self-introduction of a foreign body into the ear.³

Our findings demonstrated that the insertion of foreign bodies in the ear cast a shadow upon many ear diseases that have to be treated. OME was the most common underlying disease with aural foreign body insertion (48 %) followed by AOM (14 %), wax (12 %) and CSOM (10 %).

Table III: Findings on examination of patients with foreign body ear.

Disease	Male %	Female %	Total %
Otitis media with effusion	17 (34)	7 (14)	24 (48)
Acute otitis media	2 (4)	5 (10)	7 (14)
Wax	4 (8)	2 (4)	6 (12)
Chronic suppurative otitis media	4 (8)	1 (2)	5 (10)
Mentally Retarded	-	1 (2)	1 (2)
Inserted by someone else	1 (2)	1 (2)	2 (4)
No findings	1 (2)	4 (8)	5 (10)
Total	29 (58)	21 (42)	50 (100)

These underlying diseases were seen in males as twice as in females (Table III), while AOM was seen in 10 % of females and 4 % in males. The explanation of these differences is probably due to males outnumbering females on one hand and females are less tolerable to AOM than males on the other. Das (1984) reported that Chronic Otitis Externa (COE) was the most common underlying condition (36 %) and wax in (12 %). Das did not report any case of OME or, AOM as we did because he did not investigate his patients properly with radiology, audiometry and tympanometry. Further, we did not see any COE in our series. In some cases, we found mild lacerations and swelling of the external auditory canal skin due to either manipulations to remove the object or long time duration of the object in the canal.

Our results are in agreement with other studies in that the peak incidence of aural foreign bodies was found mostly in the age group 2-4 years and in children with underlying irritative aural diseases.³ Our results showed that 74 % of children were under the age of 6 years. Also, the results showed a mild preponderance of males (58 %) as Das (1984) results (61 %) and Ansley and Cunningham (1998) results (59 %).

Conclusions

In light of our results and those of others, we conclude that irritative underlying aural diseases (OME, AOM, wax, CSOM), are major etiological factors in aural foreign bodies in children. Other causes like natural curiosity, whims to explore body cavities, ^{2, 3} habits, insects, insertion of a foreign body by another person, and mental retardation are considered secondary etiological factors. Our results highlighted the importance of radiological, audiological and tympanometric investigation of those children with aural foreign bodies. These investigations are highly recommended in order to treat the conductive hearing loss due to OME and remove the enlarged adenoids as early as possible and consequently prevent and reduce the incidence of aural foreign body insertion.

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الاجسام الغريبة في الاذن عند الاطفال

د. خضر جودة عبد الباقي (قسم الانف والاذن والحنجرة ، كلية الطب الجامعة الاردنية ، عمان)
د. قاسم أحمد خضر (قسم الانف والاذن والحنجرة، مستشفى الزرقاء الحكومي ، الزرقاء)،

الوسطى الافرازى (48%) والتهاب الاذن الوسطى الحاد (14%) وصملاخ الاذن (12%) والتهاب الاذن الوسطى المزمن (10%) وأمراض أخرى (6%) وحالات غير مرضية (10%).

الخاتمة: أن أمراض الاذن المحفزة لادخال الاجسام الغريبة في الاذن تعتبر عوامل مسببة رئيسية. نوصي بضرورة اجراء الفحوصات الشعاعية والسمعية وفحوصات الاذن الوسطى اللازمة لكل طفل يعاني من جسم غريب في الاذن حيث تساعد في تشخيص ومعالجة الامراض المحفزة لادخال الاجسام الغريبة، وكذلك لمنع وتقليل نسبة ادخال هذه الاجسام في الاذن.

مفتاح الكلمات: اجسام الغريبة، الاذن، الاطفال.

هدف الدراسة: الهدف من البحث هو التحري عن الاسباب الموجبة لادخال الاجسام الغريبة في الاذن عند الاطفال وأيضاً لظهور اهمية التصوير الشعاعي والتقييم السمعي والاذن الوسطى.

طريقة البحث: اجريت هذه الدراسة على خمسين طفلاً، 29 من الذكور و21 من الاناث ممن يعانون من وجود جسم غريب في الاذن. أجريت لهم الفحوصات السريرية العامة وفحص الاذن والانف والحنجرة قبل وبعد ازالة الاجسام الغريبة. كذلك أجريت لهم الفحوصات الشعاعية والسمعية وقياسات الاذن الوسطى. أجريت هذه الدراسة خلال الفترة من كانون الثاني عام 2001 الى كانون الثاني عام 2002.

نتائج البحث: أوضحت نتائج هذه الدراسة العلاقة ما بين ادخال الاجسام الغريبة وبين أمراض الاذن: التهاب الاذن