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RESEARCH ARTICLE

FOREIGN BODIES OF THE EXTERNAL AUDITORY CANAL IN CHILDREN: A REVIEW OF 95 CASES.

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Key words:-

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Abstract

Objective: To carry out a retrospective analysis of children with foreign bodies of the external ear canal (EAC).

Patients and Methods: A total of 95 children up to the age of 14 years with foreign bodies of the external auditory canal managed in the department otolaryngology in the period from March 2013 to April 2016 were included.

Demographic data recorded included the patient's age and gender, type of foreign body encountered, and how and in what setting the object was successfully extracted from the EAC. The duration of the foreign bodies presence in the EAC was also recorded when available.

Results: The total number of patients was 95 and it comprised of 59 males (62%) and 36 females (38%).

Thirty five (37%) children were below the age of 5 years, 40 (42%) were 6-10 years of age and 20 (21%) in the age group of 11-14 years. The commonest objects were toy parts and cotton. The commonest presentation was local pain, found in 47% of cases. Other means of presentation include verbal admission by the child (33.3%), incident witnessed by the caregiver (6.8%), bleeding from the ear (4.3%), ear discharge (0.9%), tinnitus (2.6%), fever (1.8%) and others (4.2%). Nineteen patients (20%) required surgical removal under general anesthesia.

Of these 19 patients, 16 (84%) were below the age of 5 years. Morbidity included 7 canal lacerations and abrasions, 2 tympanic membrane perforation, 2 trauma-induced cases of otitis externa.

Conclusion: foreign bodies removal from the ear is considered to be a quite common condition in children.

Adequate immobilization of the child and proper use of instruments provides an uncomplicated removal of many of these foreign bodies in age group. general anesthesia is considered in very young children and in children of any age with certain foreign bodies whose contour, composition, or location within the external ear canal can lead to traumatic removal in the ambulatory setting.

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Introduction:-

Aural foreign bodies are generally accepted to be a common problem in children(1,2). The ease in dealing with the

FB depends on its location as well as the child's co-operation.

The emergency physicians may easily manage most FB, but some may benefit from early referral to the otorhinolaryngologist. However, it is impossible to mandate the specialty-trained physicians to remove all foreign bodies (FB) in the ear of children presenting to the children's emergency department (ED).

External auditory canal FB may be triaged by its type and location to allow for successful removal with low complication rates while avoiding unnecessary referrals. Non-urgent ENT referrals may be made for the "difficult to remove category" of FB except for cases with obvious infection, presence of disc battery or vegetative matter. The disc battery is notorious because the alkaline battery may produce intense liquefaction necrosis on contact with moist tissue or irrigation with water.

Vegetable matter may expand with moisture (3,4). These are indications for immediate ENT referral at the emergency department.

Our aim of this study was to carry out a retrospective analysis of children with different types of foreign bodies of the external auditory canal.

Material and Methods:-

The sample of this retrospective study was carried out in the department of otorhinolaryngology, Royal Medical Services, Jordan.

It includes 95 children up to the age of 14 years who present with foreign bodies of the external ear canal managed in the department in the period from March 2013 to April 2016. All children who were first received by emergency department and then sent to Otolaryngology department for the management and removal of ear foreign bodies were included.

Demographic data recorded included the patient's age and gender, type of foreign body encountered, and how and in what setting the object was successfully extracted from the EAC. The duration of the foreign body presence in the external auditory canal was also recorded when available.

Results:-

The number of children was 95 and it comprised of 59 males (62%) and 36 females (38%).

Thirty five (37%) children were below the age of 5 years, 40 (42%) were 6-10 years of age and 20 (21%) in the age group of 11-14 years. Table I lists the types of ear FB removed. The commonest objects were toy parts and cotton. The commonest presentation was local pain, found in 47% of cases. Other means of presentation include verbal admission by the child (33.3%), incident witnessed by the caregiver (6.8%), bleeding from the ear (4.3%), ear discharge (0.9%), tinnitus (2.6%), fever (1.8%) and others (4.2%).

Forty four of children presented within 24 hours of having the foreign body enter the external auditory canal. In 25 patients, the foreign body clearly had been present in the external auditory canal greater than 24 hours. In 12 patients, an accurate assessment of the length of time the object was in the external auditory canal could not be determined, and in 14 patients no duration information was available.

The objects were removed by different methods including irrigation, suctioning, or instrumentation with or without the aid of an operating microscope. Nineteen patients (20%) required surgical removal under general anesthesia. Of these 19 patients, 16 (84%) were below the age of 5 years. Morbidity included 7 canal lacerations and abrasions, 2 tympanic membrane perforation, 2 trauma-induced cases of otitis external.

Table I:- types of ear foreign bodies.

Type of foreign body	Number of cases	Percentage (%)
Toy	20	21
Cotton/paper	20	21
Pencil lead	18	18.9

Ear ring	10	10.5
Eraser	8	8.4
Organic matter	7	7.4
Stone	5	5.3
Peanut	4	4.2
Toothpick	3	3.2

Discussion:-

Patients presenting with aural foreign bodies are predominantly children in the 2 to 8 age group (5). presentation was seen early around the age of 9 months by which a child start to develop a pincer grip, where he can easily manipulate small objects (6). Most of the Patients were found to be male and of low socioeconomic class (7).

In this report, we have found that 62% of children were males, 79% of children were under the age of 10 years. Children with aural foreign bodies have a different variety of presentiaions. Occasionally the placement of the foreign body is a witnessed event or in some instances the foreign body is an incidental finding on routine examination.

The child who is old enough to speak will often report the presence of the foreign body to a supervising adult; this reporting is typically because of secondary irritation or pain. It is important to be aware that aural foreign bodies in younger children may be heralded solely by otalgia, otorrhea, or other otitis manifestations. Unusual symptoms such as cough and hiccups were also reported (8, 9). However, in report the commonest presentation was local pain, found in 47% of cases.

Other means of presentation include verbal admission by the child (33.3%), incident witnessed by the caregiver (6.8%), bleeding from the ear (4.3%), ear discharge (0.9%), tinnitus (2.6%), fever (1.8%)`and others (4.2%). Various theories exist as to why children place foreign bodies into their EACs. Irritation caused by preexisting otologic diseases such as cerumen impaction, otitis externa and otitis media were the most significant predisposing etiologic factors in one study; mental retardation, curiosity, accidental placement, and fun-making were of comparatively less importance (1).

Commonest objects in our report were cotton buds, toys and pencil lead. While cotton buds and irregularly-shaped toys may be graspable, we had less success with smooth and spherical toys and pencil leads. In some studies, smooth and spherical FB had the worst outcomes (10, 11).

Dimuzio et al found that the complication rates for smooth-surfaced objects were considered higher than those of irregularly-shaped objects: 70% versus 14% ($p < 0.001$), which is understandable as the objects cannot be readily grasped (10). Schulze et al found that spherical FBs were associated with the least success rates for removal and the highest complication rate, and the complication rate showed the greatest dependence on the presence or absence of multiple attempts (11).

The removal of an EAC foreign body can be a simple process if the object is in the lateral one-third of the EAC and adequate instrumentation and staff support are available. Because the EAC narrows acutely at the junction of its cartilaginous and osseous portions, objects within the medial two-thirds of the EAC present a greater challenge.

Manipulation of objects in the osseous portion of the ear canal is both potentially painful and traumatic as the skin overlying the periosteum is exquisitely tender and highly vascular. A variety of instrumentation should be available for extraction of aural foreign bodies given the variety of objects encountered. Frazier tip suction, alligator forceps, Hartman forceps, cerumen loops, and right-angle ball hooks constitute the typical armamentarium.

If an aural foreign body is not easily removed or if adequate instrumentation or staffing is not available, a referral to an otolaryngologist is indicated. Multiple attempts at removal serve to decrease cooperation on the part of the child, making the need for anesthesia more likely. Multiple unsuccessful attempts at foreign body removal also increase the risk of traumatic canal abrasions, lacerations, and bleeding, all which further complicate future extraction attempts by the otolaryngologist.

Tightly wedged objects, objects sitting against the tympanic membrane, and objects with sharp edges are all

indications for otolaryngologic referral and possible operative extraction. Insects, disc batteries, putty, and other unusual objects may also require otolaryngologic consultation for the reasons previously outlined. Bressler and Shelton (3) found that only 6% of their 98 patients required sedation for foreign body extraction.

Their population was comparatively older, with 57% of their patients more than 12 years of age. In this study, 20% of the patients underwent operative foreign body removal. Age at presentation proved to be the most significant factor associated with the need for general anesthesia, as 84% of these operative patients were less than 5 years of age. Young children will not allow repeated attempts at foreign body removal.

In children who are uncooperative and difficult to restrain, it is safer to remove the object in a more controlled setting. Complications can happen either due to the foreign body itself, or from the examination or from an attempt to remove the foreign body. The most common complications encountered are abrasions, bleeding due to injury, secondary infection and tympanic membrane perforation (12). However in this study, 7 canal lacerations and abrasions, 2 tympanic membrane perforations, 2 trauma-induced cases of otitis externa were reported.

Conclusion:-

Removal of foreign bodies from the ear is considered to be a common problem in children. Adequate immobilization of the child and proper use of instruments provides an uncomplicated removal of many of these foreign bodies in age group. general anesthesia is considered in very young children and in children of any age with certain foreign bodies whose contour, composition, or location within the external ear canal can lead to traumatic removal in the ambulatory setting.

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