

Cerumen Impaction: Its Associated Risk Factors and Clinical Presentation

Factors
Associated With
Cerumen
Impaction

Sana Muhammad Sadiq¹, Sajid Rashid Nagra², Salman Aftab Ahmed², Manzoor Ahmed³,
Muhammad Khalil⁴ and Zeeshan Ali³

ABSTRACT

Objective: To determine the factors associated with cerumen impaction to endorse public education about safe ear hygiene, moreover encourage earlier detection and management at the healthcare professional's level.

Study Design: Prospective study

Place and Duration of Study: This study was conducted at the ENT Department, Niazi Welfare Teaching Hospital, Sargodha, from January 2022 to July 2022.

Materials and Methods: All the patients aged ≥ 15 years presented in the E.N.T clinic, diagnosed with cerumen impaction, were included. A detailed history was asked and ear examination was done. Patients with co-existing ear infections and patients not willing to participate were excluded. Statistical analysis was done on SPSS version 25.

Results: A total of 539 patients who participated in our study, aged between 15 to 80 years (32.47 ± 16.21), showed male preponderances. Bilateral impaction (63.6%) was more prevalent. The narrow ear canal was the most common (34.7%) anatomical variation. The habit of inserting cotton-tipped swabs into ears was found among 80.5% of patients. The common complaints were ear blockage (97%), itching (72.9%), pain (31.7%), and tinnitus (31.4%).

Conclusion: Impacted cerumen is associated with highly preventable risk factors. Public education about safe ear hygiene and timely referral of patients in ENT clinics will decrease the burden on the healthcare budget.

Key Words: Cerumen Impaction, Ear Blockage, Tinnitus, Ear Hygiene

Citation of article: Sadiq SM, Nagra SR, Ahmed SA, Ahmed M, Khalil M, Ali Z. Cerumen Impaction: Its Associated Risk Factors and Clinical Presentation. Med Forum 2022;33(9):29-32.

INTRODUCTION

Cerumen (Figure 1.1) is the natural secretion of ceruminous and sebaceous glands, admixed with exfoliated skin of the outer ear canal, creating an acidic coat over it¹.

It contains IgA antibodies and lysozymes adding to its bacteriostatic and fungistatic properties².

It extrudes from the ear canal by a self-cleansing mechanism through migration of deep ear canal skin, assisted by the movement of the jaw³. Cerumen impaction is a clinical diagnosis, when cerumen causes specific symptoms in a person and /or prevents the examination of the ear⁴.

Impacted cerumen is one of the commonly encountered conditions in E.N.T (Ear, Nose, and Throat) clinics. According to an estimate, it affects 2-6% of the general population⁵.

A study conducted by Muhammad et. al (2015) evidenced the prevalence of cerumen impaction as 12.17% in a given adult population in Swat, Pakistan⁶.

Cerumen removal is a commonly performed procedure in E.N.T clinics. It carries a significant burden on the health care budget globally. In the United States, it leads to 12 million patient visits and eight million cerumen removal procedures each year⁷.

There are several factors that promote cerumen impaction including: narrow and tortuous canal, thick vibrissae⁸, physical barriers like hearing-aids, earphones etc. interfere with the migration of skin from deeper canal, thus arrest the process of self-cleansing mechanism of ear canal⁹.

In our society, people habitually insert several objects in their ears to clean or scratch the ears, like hair pins, cotton-tipped swabs, match sticks, broomsticks, fingers and even car keys, etc. These acts interfere with the process of epithelial migration and in turn cause cerumen impaction rather than extraction, also these foreign objects carry the risk of injuries to ear canals and eardrums as well¹⁰.

Impacted cerumen causes variety of bothersome symptoms like ear blockage, itching, tinnitus, pain,

¹. Department of ENT, Niazi Welfare Foundation Teaching Hospital, Sargodha.

². Department of ENT, Rai Medical College, Sargodha.

³. Department of ENT, Combined Military Hospital, Sargodha.

⁴. Department of ENT, Sargodha Medical College, Sargodha.

Correspondence: Sana Muhammad Sadiq, Department of ENT, Niazi Welfare Foundation Teaching Hospital, Sargodha.

Contact No: 0309-5801357

Email: sanaent1112@gmail.com

Received: August, 2022

Accepted: August, 2022

Printed: September, 2022

unexplained cough due to Arnold’s nerve irritation¹¹, and vertigo¹². Our daily routine very much depends on healthy ears and this organ does not demand much, actually it is designed to care for itself. Wetness around the canal can be wiped outwardly with a soft cloth or piece of tissue paper. In case of any bothersome symptoms, diagnosis should be confirmed by health care professional and if cerumen removal is needed, then it should be done an otorhinolaryngologist. According to 2017 guidelines of American Academy of Otolaryngology-Head and Neck Surgery Foundation, healthcare providers should educate patients about proper ear hygiene to prevent cerumen impaction¹³.

MATERIALS AND METHODS

It is a prospective study, conducted at Niazi welfare teaching hospital, Sargodha, from January 2022 till July 2022, after obtaining ethical committee review approval. All the patients aged ≥15 years, diagnosed using Otoscope-ri-mini-2.5V (Riester) with impacted cerumen were included in the study, after obtaining an informed consent. For patients under 18 years, consent was obtained from the guardians.

Patients with co-existing ear infections and those who were not willing to participate were excluded. Data were collected on a questionnaire, developed by the department of E.N.T. After taking history, a detailed E.N.T examination was performed. Privacy and confidentiality of every patient were maintained throughout the study. Statistical Package for Social Sciences (SPSS) version 25.0 (IBM SPSS Statistics, Armonk, NY) was used for data entry and statistical analysis.

Descriptive statistics in the form of Frequencies and percentages (%) were reported for categorical variables (gender, age, site of impaction, congenital variations, habit of using cotton-tipped swabs and symptomatology). Data assessment by chi-square test was done where appropriate. Mean ±SD was stated for quantitative variables as age. A p-value of < 0.05 was considered significant all through the analysis. Approval was obtained for this study from the Ethical Review Committee (ERC), NWFTH. During the course of the study, rules were followed in accordance with the tenets of the Declaration of Helsinki.

RESULTS

During the study period, a total of 539 patients participated, aged between 15 to 80 years (32.47±16.21), showed male predominance (Table 1.1). Bilateral impaction (63.6%) was more prevalent (Graph 1.1). Among anatomical variations, in otherwise healthy subjects, a narrow ear canal was most commonly (34.7%) seen (Graph 1.2).

Among physical barriers, cotton tipped swab was the commonest object used to insert in the ear canal (Table 1.2). The common complaints were ear blockage (97%), itching (72.9%), pain (31.7%), and tinnitus (31.4%).

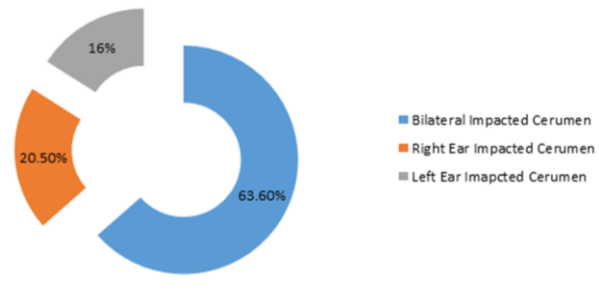


Figure No.1: Site of Impaction

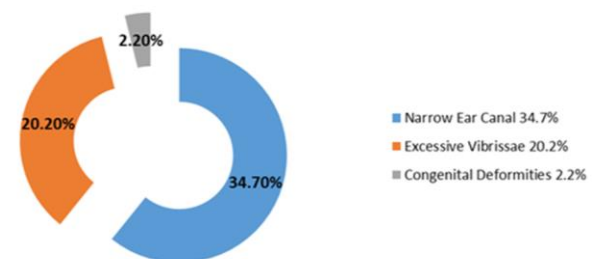


Figure No.2: Anatomical Variations

Table No.1: Gender Distribution

Gender	Frequency	Percent
Males	325	60.3%
Females	214	39.7%
Total	539	100%

Table No.2: Physical Barriers

Number of participants (n=539)	Cotton-tipped Swabs	Ear phones	Hearing aids
	434/539	166/539	0
Percentage	80.5%	30.8%	0

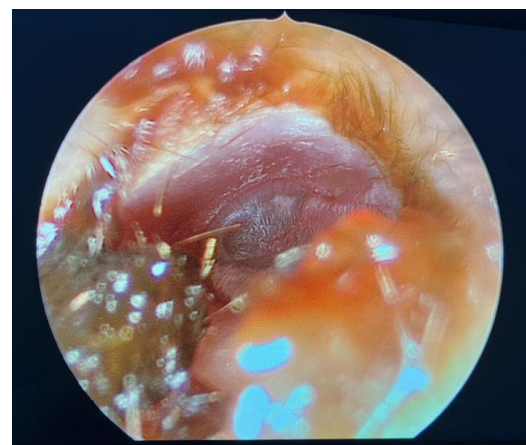


Figure No.3: Endoscopic View Of External Auditory Canal

DISCUSSION

Cerumen is a natural secretion of the human body, which expels itself through the movement of the jaw. Several factors lead to its impaction which results in the emergence of bothersome symptoms.

In our study, the frequency of impacted cerumen is found predominant in males 60.29% vs 39.7% females, Abdullah et al (2021) did a case-control study and evidenced male preponderance equal in both groups (89.1% vs 10.9%)¹⁴.

Though no specific difference on basis of gender was found, Shija et al (2019), speculated that cerumen impaction is more prevalent in males because the larger tragus and larger and coarser vibrissae in the external auditory canal may impede cerumen extraction¹⁵.

In our society, most males are the heads and bread earners of their families, so hitches, like hearing impairment, and challenges at the workplace may reason for their earlier and more frequent visits.

To prove the root cause, more extensive research work is needed in the future.

In our results, the mean age of participants is 32.47 ± 16.21 years. John Launer (2021), acknowledged an increase in its prevalence after 40 years¹⁶. The most probable causes include age-related changes like coarser hairs, drier glands, and hearing aids, and the development of bony growths like osteoma may impede the natural excretion of cerumen¹⁷.

Bilateral ear (63.6 %) involvement was more prevalent (Graph 1.1). In cases of unilateral impaction, most studies proved no significant difference exists between right and left ear involvements.

Agoda et al (2009) verified bilateral cerumen impaction in 43% of cases, and in unilateral involvement, no notifiable difference existed between the right and left ear (15.1% vs 14.3%)¹⁸.

In our study, the most commonly identified anatomical variation in otherwise healthy subjects was a narrow ear canal (34.7%) (Graph 1.2). Many studies support the evidence of anatomical variations limiting cerumen excursion naturally¹⁹ but we could not find data on the prevalence of such cases in the otherwise healthy population.

Cotton-tipped swabs are universally misused by all age groups. In our study, 80.5% patients had this habit.

Adoga et al (2013) ascertained in their study that cotton buds (89.1%) are one of the most common objects which are misused for self-cleaning of ear²⁰. Inserting a cotton swab in the ear canal allows the entry of fungi and bacteria in the ear and habituated rubbing induces inflammation which may be progressed to otitis externa²¹. It does not necessarily remove cerumen but a patient may induce self-inflicted trauma like injury to the skin of the canal or perforated eardrums.

Regular use of earphones found in 30.8%. In their study, Waheed et al (2014) evidenced that 13.5%

patients were wearing physical barriers like hearing aids and other foreign bodies²². None of our patients was wearing a hearing aid, Manchaiah et al (2015) also stated in their study that a hearing aid does not increase the likelihood of cerumen impaction²³. In our view, it also highlights the concern of poverty and ignorance about hearing rehabilitation in a developing country like Pakistan. Nonetheless, more research work should be done on this subject.

In our database, symptoms according to descending order of frequency were ear blockage (97%), itching (72.9%), pain 31.7% and tinnitus (31.4%).

In a study by Fufore et al (2021), the frequency of symptoms was noted as hearing loss at 61.3%, ear blockage at 56.6%, ear pain at 49.4%, tinnitus at 42.7%, and itching at 25.2%²⁴. All the above-mentioned symptoms directly affect the quality of life of an individual and may cause the lost school or work days thus decreasing the productivity ratio of a person.

Cerumen secretion serves as a natural protective barrier for the ear canal. A qualified healthcare professional should be approached in case of any unusual symptoms. Ear, Nose, and Throat surgeons are specially trained in cleaning the ears under direct vision by safe means. A visit to untrained quacks or self-inflicted injuries in an attempt to self-clean the ear will lead to long-term complications like otitis externa, otomycosis, perforated tympanic membrane, and impaired hearing etc.²⁵

CONCLUSION

Cerumen impaction is a global issue but it carries low prestige in our society and less support for research work. Though it causes bothersome symptoms which impact the quality of life, causes social withdrawal, affects intellect of an individual ultimately decreases the work productivity of a person. We require more data for the upkeep of our community.

It is a highly preventable condition after proper counseling and promoting public education about safe ear hygiene. Spreading awareness among family physicians and resident doctors about usual and unusual symptoms of impacted cerumen like unexplained cough or vertigo plays a vital role in the timely referral of patients to E.N.T clinic for correct diagnosis and adequate management.

Author's Contribution:

Concept & Design of Study:	Sana Muhammad Sadiq
Drafting:	Sajid Rashid Nagra, Salman Aftab Ahmed
Data Analysis:	Manzoor Ahmed, Muhammad Khalil, Zeeshan Ali
Revisiting Critically:	Sana Muhammad Sadiq, Sajid Rashid Nagra
Final Approval of version:	Sana Muhammad Sadiq

Conflict of Interest: The study has no conflict of interest to declare by any author.

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