

Wax Impaction among School Children Aged 7-17 Years in Kaduna Metropolis, Kaduna, Nigeria

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Abstract

Background: Wax impaction may affect the hearing ability of pupils aged 7-17 years, making them find it difficult to cope with the normal classroom situation. We aimed to present our experience during a survey of schools in Kaduna metropolis, Kaduna Nigeria.

Participants and Methods: This was a prospective cross sectional survey of primary and junior secondary school pupils. Ethical approval was obtained from the Kaduna state Ministry of health's Health Research and Ethics Committee (HREC). Participants were selected in a stratified sampling fashion. Biodata and ear examination findings were recorded in a proforma. The collated data was analysed using Statistical Product and Service Solutions (SPSS) for Windows, version 20.0.

Results: A total of 430 pupils (860 ears) were examined. The age range of participants was 7-17 years with mean age of 13.1 ± 1.8 . Fifty participants had previous consultation with an ENT specialist in their life time. Five pupils had complaints of hearing impairment while 72 (16.74%) pupils complaint of pains in the ears. One hundred and twenty seven (29.53%) pupils were found to have impacted wax in their external auditory canals. They all had the wax removed using different modalities of treatment.

Conclusion: Wax impaction was found to be common among school pupils aged 7-17 years of Kaduna metropolis. Regular health talks in schools should consist of ear care.

Keywords: Wax impaction; Pupils; Kaduna; Nigeria

Introduction

Ear wax production is a normal for the ear canal and it is also protective to the external auditory canal [1]. Ear wax is a mixture of sebaceous and ceruminous glands secretion in the outer one third of the external auditory canal, mixed with desquamated epithelium which gives it the brownish colour especially among black Africans [2,3]. Ear wax is a normal physiological finding across ages and gender, it is estimated that ear wax can be found impacted in about 10% of children population, 57% of older adults and nearly 60% of geriatrics [4].

Wax impaction in the ears is usually asymptomatic, however, in about 6% of individuals, there may be complaints of itching in the ear, hearing loss, dizziness, otalgia, aural fullness [2,5,6]. Hearing loss as a symptom in patients with wax impaction, especially in school going children may affect their learning abilities with subsequent poor performance in class. Conductive deafness arising from wax impaction can affect linguistic, intellectual and social development of a child, especially school going pupils [7].

Ear wax impaction can be treated by several techniques ranging from manual removal with a wax hook or Jobson-Horne aural probe, ear syringing, suctioning method or the use of irrigation method [8,9]. Choice of a method for the removal of ear wax largely depends on expertise, availability of equipment and most importantly co-operation of the patient especially among school going children.

Participants and Methods

This was a prospective cross-sectional survey of primary and junior secondary school pupils. Ethical approval was obtained from the Health Research Ethics Committee (HREC) of the Kaduna State Ministry of Health (MOH/ADM/744/Vol.1/462). Sample size for the study was calculated using Fisher formula for cross-sectional study thus: $n = Z^2pq /$

D^2 where p =prevalence of wax impaction in that age group, $q=p-1$, Z =standard normal deviate, which is 1.96 at 95% confidence interval and D =degree of precision at 95% confidence interval. Due to lack of prevalence study in that age group, 50% was used as an estimated prevalence, giving the required sample size as 422 pupils. Informed consent was obtained from the parents/guardians and assent obtained from the pupils. Two regular government junior secondary schools, fifteen regular public primary schools and five regular private primary schools within the Kaduna North Local Government were surveyed. Pupils were selected in a stratified sampling fashion. Demographic data, history of ear pain, ear discharge, hearing impairment, specialists' consultation were recorded in a proforma. Pupils' ears were examined, first with a head light and then with heine hand held battery powered otoscope, examination findings were entered in to the proforma. The data collection was carried out over 10 month period from November 2016 to August 2017. The collated data was analysed using SPSS for Windows, version 20.0.

Results

The minimum age of the participants was 7 years while the maximum was 17 years of age. The mean age of the participants was

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Grouped Age (Years)	Frequency	Percentage
6 – 9	5	1.2
10 – 14	330	76.7
15 – 17	95	22.1
Total	430	100
Gender		
Males	242	56.3
Females	188	43.7
Total	430	100

Table 1: Age and sex distribution of the pupils.

Finding	Right EAC		Left EAC	
	Frequency	Percent	Frequency	Percent
Discharge	13	3	3	0.7
Wax	84	19.5	100	23.3
Foreign body	5	1.2	1	0.2
Clear	327	76	326	75.8
Total	430	100	430	100

EAC = External auditory canal

Table 2: Distribution of external auditory canal findings at otoscopy.

13.1 with a standard deviation of 1.8. Two hundred and forty two pupils were males and one hundred and eighty eight pupils were females with a Male:Female ratio of 1.3:1 (Table 1).

Fifty (11.6%) participants had previous consultation with an ENT specialist in their life time. Five (1.2%) pupils had complaints of hearing impairment while 72 (16.7%) pupils complaint of pains in the ears. One hundred and twenty seven (29.5%) pupils were found to have impacted wax in their external auditory canals. Four hundred and twenty two (98.1%) pupils had intact tympanic membranes while 8 (1.9%) had perforated tympanic membranes. The otoscopic finding among the participating pupils is as shown in Table 2.

Discussion

Wax impaction spares no age, gender or race. In this study, the prevalence of wax impaction among school going children in Kaduna metropolis was found to be 29.5%. Brkic [7] documented 24.4% in Bosnia Herzegovinian school children while Sesi et al. [4] found a prevalence of 22.4% among Ghanaian school children. The higher prevalence of wax impaction in this study could be connected to the use of cotton-tipped ear swab used by mothers in cleaning the ears of their children, especially the very young children as a means of ear hygiene. Males predominate with a male to female ratio of 1.3:1. Male predominance in the present study might be attributable to the behavior of the male child to participate in most activities while in school. The most frequent complaint among the participants was otalgia among 72 (16.74%) participants. This finding corresponds to an earlier study conducted among adults in northeastern Nigeria [2] Olajide [3] in Ekiti southwestern Nigeria while assessing patients with cerumen impaction documented hearing impairment as the most common complaint, followed by ear blockage and tinnitus.

Fifty of the 127 pupils with impacted wax in their external auditory canals had manual removal of the ear wax with either a wax hook or Jobson-Horne aural probe while 77 of them had ear syringing either at first visit or after the application of cerumenolytic agent, in all instances olive oil. Ten patients that had their wax removed manually developed complications in form of canal abrasion. None of those that had ear syringing had complication. Shope et al. [8] did not document any advantage of using either curettage method or irrigation (syringing) as a method of cerumen removal. However, in developing countries like Nigeria, due to lack of specialists in ENT in most centers, ear syringing can be effectively performed by trained health assistants but manual removal should be performed by trained Medical personnels. In this study, ear syringing by an ENT specialist has been found to be safer compared to the other methods of wax removal employed, as evidenced by lack of complications associated with the procedure. Hence, from evidence that emanated from this study, the authors recommend the use of ear syringing to remove wax in school going children aged 7-17 years who had impacted wax in their external auditory canals.

Conclusion

Wax impaction was found to be common among school going pupils of Kaduna metropolis. They all had the wax removed by the investigators using various modalities. Choice of method for removal largely depends on expertise. All methods can be associated with a complication but ear syringing is safer. Regular health talks in schools should consist of ear care.

Conflicts of Interest

None.

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