Pediatrics ear syringing in a tertiary health institution of a developing country: Our experience

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Abstract

Ear syringing is a common otologic procedure in otorhinolaryngologic practice worldwide. This study aimed at determining the prevalence, indications, contraindications, complications and sources of referral that are associated with ear syringing among children in a tertiary health institution of a developing country. This was a retrospective study of all patients that had ear syringing in the Ear, Nose and Throat department of our center over two years. Data was analyzed using SPSS version 18.0. Statistical significance was set at p-value ≤0.05. There were 176 (59.9%) male participants with a male to female ratio of 1.5:1. The prevalence of ear syringing in children less than 18 years was 9.1%. Main indications for ear syringing were impacted earwax 173 (58.8%), impacted foreign body in the ear 62 (21.1%), fungal debris 41 (13.9%) and dried pus debris (post otitis externa) 15 (5.1%). Unilateral ear syringing 227 (77.2%) was more common than bilateral ear syringing 67 (22.8%), with the right ear syringing done in138 (46.9%). The majority 201 (68.4%) of the earsyringing was done by specialist ENT nurses and 86 (29.3%) by resident doctors. Two hundred and nineteen (74.5%) were performed in outpatient clinics while 67 (22.8%) were in the emergency ward. Relative contra-indications to ear syringing occurred in 184 (62.9%). Some of the contraindications were hard impacted earwax and acute otitis externa in 132 (44.9%) and 42 (14.3%) respectively. Complications occurred in 63 (21.4%) and these were failed procedures in 26 (8.8%), otalgia in 9 (3.1%), and irritating cough 9 (3.1%). The main sources of referral were Family physicians in 82 (27.9%) and Paediatricians in 76 (25.9%). Prevalence of pediatric ear syringing was 9.1%. Common indications are preventable diseases. The procedure appears very simple, but it is associated with some complications.

Introduction

Ear syringing is an otologic procedure of irrigation of the external auditory canal with warm normal saline or sterile water at body temperature.[1-3] This procedure is usually performed using a traditional ear syringe (Higginson syringe). Other types of syringes includeautomatic syringes and 20 or 50 mL syringes mounted with wide bore cannula (18G or 16G).[4-9] Other requirements are ear can, kidney dish, warm water/normal saline, cotton wool, Jobsonhorne's probe, headlight and drapes. The external auditory canal in children is straightened out by pulling the pinna outward and downward due to its developmental anatomic state. It is commonly performed in clinics, offices, and rarely in the theatre.[2,3]

Ear syringing is the most common otorhinolaryngologic procedure which is performed by other health workers in developing countries such as Community Health Extension Workers (CHEW) who may have inexperienced hands with poor knowledge of the anatomy and physiology of the ear. Their procedures were not proper and rough because they arenototorhinolaryngologic-trained specialists.[4,9]

There are various indications for ear syringing among children in medical practice and these indications could be handled by using ear syringing, suctioning and instrumentation depending on the expertise to avoid complications thus, safe management requires skilled hands and appropriate instruments, with or without anaesthesia.[10,11] However, despite the safety and simplicity of the procedure, it is not devoid of avoidable complications.[12,13] This study aimed at determining the prevalence, indications, contraindications, complications and source of referrals that are associated with ear syringing among children in our center.

Materials and Methods

This was a retrospective study of all patients that had ear syringing in the ENT department of Ekiti State University Teaching Hospital, Ado Ekiti, in southwestern Nigeria that was carried out over a period of two years (between July 2017 and June 2019). Ethical clearance was received from institutional ethical review committee.

Data on ear syringing from clinic records and departmental procedure records were reviewed. All the case notes were retrieved from the medical records archive of the hospital. Information retrieved included the patient's bio-data, socio-demographic features, presenting complaints, examination findings, diagnosis, procedures, indication, contraindications, and associated complications of the procedure.

Data obtained was collated and analyzed using SPSS version 18.0. The results were presented in descriptive forms as frequency tables, percentages and pie charts.

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Key words: Ear syringing; paediatric; indications; complications; Nigeria.

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Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Ethics approval and consent to participate: The Ethics Committee of Ekiti State University Teaching Hospital approved this study (EKSUTH/A67/2016/04/011C). The study is conformed with the Helsinki Declaration of 1964, as revised in 2013, concerning human and animal rights. All patients participating in this study signed a written informed consent form for participating in this study.

Informed consent: Written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

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Results

The total numbers of patients seen over the studied period were 3243, out of which a total of 697 (21.5%) had ear syringing and 294 (9.1%) were performed on children under 18 years.

All the studied age groups had ear syringing done with the highest frequency of 101 (34.4%) at the age group 6-10 years as shown in Table 1.

There were 176 (59.9%) males and 118 (40.1%) with a male to female ratio of 1.5:1. Christians were 259 (88.1%) and Muslims were 35 (11.9%). Urban dwellers were 163 (55.4%) while rural dwellers accounted for 131 (44.6%). Level of education among parents was 92 (31.3%) attained primary school, 87 (29.6%) attained secondary school, and 76 (25.9%) attained post-secondary education. The most common occupation among the parents was civil servant 107 (36.4%). Others were business 93 (31.6%), students/apprentices 52 (17.7%), and farming 42 (14.3%) as demonstrated in Table 2.

Main indications for ear syringing were impacted ear wax 173 (58.8%), impacted foreign body in the ear 62 (21.1%), fungal debris 41 (13.9%), dried pus debris (post otitis externa) 15 (5.1%) and keratosis obturans 3 (1.0%) as illustrated in Table 3.

Unilateral ear syringing, 227 (77.2%) was more common than bilateral ear syringing, 67 (22.8%). Right ear syringing was done in 138 (46.9%) and left ear syringing was done in 89 (30.3%) as shown in Figure 1.

The majority, 201 (68.4%) of the ear syringing were done by specialist ENT nurses, 86 (29.3%) were done by trainee resident doctors and 7 (2.4%) were done by an otorhinolaryngologist (consultant).

These ear syringing were performed in outpatient clinic 219 (74.5%), emergency ward 67 (22.8%), and 8 (2.7%) in the theatre based on the clinical presentation by the patients.

The relative contraindications to ear syringing occurred in 185 (62.9%) of patients andthese were hard impacted earwax, acute otitis externa, and uncooperative patients in 132 (44.9%), 42 (14.3%), and 11 (3.7%) respectively as illustrated in Figure 2.

Complications were recorded in 63 (21.4%) while the rest 231 (78.6%) of the patients had no complications. Failed procedures 26 (8.8%), otalgia 9 (3.1%), cough 9 (3.1%), vertigo 7 (2.4%), bradycardia 5 (1.7%), otitis externa 4 (1.4%) and injuries to external auditory canal 3 (1.0%) as in Table 4.

The most common source of referral

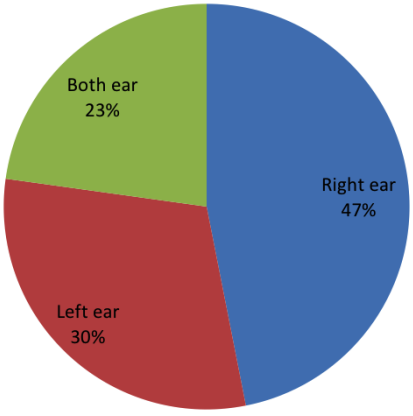

Figure 1. Lateralization of ear syringing among paediatric patients.

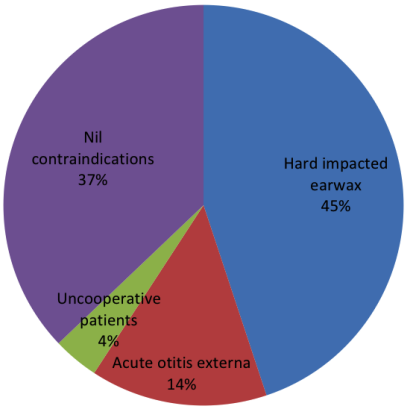

Figure 2. Contraindications to ear syringing among the patients.

Table 1. Age groups distribution of paediatric patients.

Age groups (years)	Frequency	Percentage (%)
1-5	96	32.7
6-10	101	34.3
11-15	54	18.4
16-18	43	14.6
Total	294	100

Table 2. Socio-demographic features among the patients.

Socio-demographic features	Frequency	Percentage (%)
Gender		
Male	176	59.9
Female	118	40.1
Religion		
Islam	35	11.9
Christianity	259	88.1
Residential		
Urban	163	55.4
Rural	131	44.6
Parental Level of education		
None	39	13.3
Primary education	92	31.3
Secondary education	87	29.6
Post-secondary	76	25.9
Occupation of parent		
Students/apprentice	52	17.7
Business	93	31.6
Civil servants	107	36.4
Farming	42	14.3

Table 3. Indication for ear syringing among patients.

Indications	Frequency	Percentage (%)
Impacted earwax	173	58.8
Impacted foreign body	62	21.1
Fungal debris	41	14.0
Dried pus debris (post otitis externa)	15	5.1
Keratosis obturan	3	1.0
Total	294	100

was family physicians 82 (27.9%). Others were paediatricians, casualty officers, and self-reporting in 76 (25.9%), 65 (22.1%), and 48 (16.3%) respectively as shown in Table 5.

Discussions

Ear syringing is a common otorhinolaryngologic procedure by ENT specialists and other medical practitioners. The prevalence of 9.1% among children in this study was similar to other studies.[16] The procedure is multipurpose because it is assumed to be simple and require less skill.[14,15]

Ear syringing was more common in boys 176 (59.8%) than girls 118 (40.1%) and this was similar to the study by Ogunleye and Awobem.[16] The hyperactivity and carelessness of male children in exploring the head and neck orifices with available environmental objects may explain this.[17]

This study found that the most common indications for ear syringing among patients were impacted ear wax 173 (58.8%), impacted foreign body in the ear 62 (21.1%), fungal debris 41 (13.9%), dried pus debris (post otitis externa) 15 (5.1%) and keratosis obturans 3 (1.0%) impacted earwax, ear foreign body impaction, fungal debris, and Dried pus debris (post otitis externa). This was similar to findings in other studies.[11,15,16] This may be because ear wax impaction was noted among patients with a higher incidence of deliberate ear self-cleaning with cotton buds;[16-18] foreign body impaction was common in patients with preschool and lower primary school children, which necessitated ear syringing[17]and many patients with acute otitis externa presented late after being wrongly diagnosed.[19]

Unilateral ear syringing (77%) was more common than bilateral ear syringing in this study. This was contrary to other studies.[16] The reason may be because an individual can only be right or left handed depending on the dominant cerebral hemisphere thus self-exploration of the external ear with various available objects and ear picking would be done by one hand and unlikely with both hands. However, contrary to reported findings in other studies,[16] right ear syringing was more common than left ear syringing in this study.

Similar to other studies,[18,20] majority of the ear syringing were performed by ENT trained nurses (68.4%). Others were done by resident doctors and consultant otorhinolaryngologists. Most ear syringing was performed in the ENT outpatient clinic followed by the emergency ward, and rarely in the theatre. Ear syringing in the emergency ward was done by the resident doctors on-call duty. Ear syringing in the theatre was first attempted by resident doctors in the out-patient clinic and when that failed or difficult, it was then done by a consultant otorhinolaryngologist.

Contraindications to ear syringing among patients in this study were relative and similar to reports by other studies.[21-25] These were hard impacted ear wax, acute otitis externa, and uncooperative patients. Hard impacted ear wax was first managed by ceruminolytic agents, commonly olive oil and cerumol ear drops to soften the ear wax. Infected ear wax and cases of acute otitis externa were treated by topical antibiotic-based ear drops. Uncooperative patients were assured or had ear syringing done under general anaesthesia to avoid preventable complications. There was no absolute contraindication to ear syringing in this study.

Similar to other studies,[26-28] ear syringing were associated with different complications in our findings. The complications such as failure of the procedure, external auditory canal injuries, otitis externa, and otalgia were recorded in 21.4% of patients in this study. Bradycardia and cough were probably caused by neural stimulation of Arnold's nerve which is from distribution of Vagus nerve. Vertigo may be from vestibular stimulation where there was a wide temperature difference.

Patients for ear syringing were referred from different specialties, including family physicians, paediatricians, and casualty officers as these were the primary caregivers who were first consulted.

Table 4. Complications of ear syringing among the patients.

Complications	Frequency	Percentage (%)
Failed procedure	26	8.8
Vertigo	7	2.4
Otalgia	9	3.1
External auditory canal injuries	3	1.0
Acute otitisexterna	4	1.3
Cough	9	3.1
Bradycardia	5	1.7
Nil complications	231	78.6
Total	294	100

Table 5. Sources of referral among the patients.

Referral	Frequency	Percentage (%)
Paediatrician	76	25.9
Family physician	82	27.9
Self- reporting	48	16.3
Casualty officer	65	22.1
Others	23	7.8
Total	294	100

Conclusions

The prevalence of Paediatric ear syringing in this study was 9.1%. Common indications for the procedure in children were preventable diseases. Despite that the procedure appears simple; it was associated with some complications even in the hands of experts. It may be paramount to educate caregivers about the preventable indications.

References

1. Farooq M. Comparison of syringing of the Ear Wax with plastic Funding Source: Nil Disposable and Metallic Syringes. JIMDC 2017;6:170-3.
2. Pothier DD, Hall C, Gillett S. A comparison of endoscopic and microscopic removal of wax: a randomized clinical trial. Clinical Otolaryngol 2006;31:375-80.
3. Bird S. The potential pitfalls of ear syringing. Minimizing the risks. Australian Family Physician 2003;32:150.
4. Mitka M. Cerumen removal guidelines wax practical. JAMA 2008;300:1506.

5. Kumar S, Kumar M, Lesser T, Banhegyi G. Foreign bodies in the ear: a simple technique for removal analyzed in vitro. Emerg Med J 2005;22:266-8.
6. Coppin R, Wicke D, Little P. Managing earwax in primary care: efficacy of self-treatment using a bulb syringe. Br J Gen Pract 2008;58:44-49.
7. Mandel EM, Dohar JE, Casselbrant ML. Aural irrigation using the OtoClear® Safe Irrigation System in children. Int J Pediatric Otorhinolaryngol 2004;68:1295-9.
8. Snelling JD, Smithard A, Waddell A. Noise levels generated within the external auditory canal during microsuction aural toilet and the effect on hearing: a prospective controlled series. Clinical Otolaryngol 2009;34:21-5.
9. Blake P, Matthews R, Hornibrook J. When not to syringe an ear. New Zealand Med J 1998;111:422-4.
10. The American Academy of Otolaryngology-Head and Neck Surgery Foundation. Clinical practice guidelines issued for managing earwax impaction. Otolaryngol-Head Neck Surg 2008;139:S1-S21.
11. Adegbiji WA,Aremu SK, Aluko AAA, OlubiO. Management of Otological Foreign Bodies Impaction in Tertiary Health Care Center. Int J Innov Res Med Sci 2019;04:97-102.
12. Dinsdale RC, Roland PS, Manning SC, Meyerhoff WL. Catastrophic otologic injury from oral jet irrigation of the external auditory canal. Laryngoscope 1991;101:75-8.
13. Bapat U, Nia J, Bance M. Severe audiovestibular loss following ear syringing for wax removal. J Laryngol Otol 2001;115:410-1.
14. Adegbiji WA, Olajide TG, Aluko AA, Eletta AP. Paediatric Otorhinolaryngological, Head and Neck Procedures in a Nigerian Tertiary Health Care Centre. Am J Otolaryngol Head Neck Surg 2019;2:1037.
15. Eziyi JAE, Amusa YB, Nwawolo CC, Ezeanolue BC. Wax Impaction in Nigerian School Children. East Central Afr J Surg 2011;16:40-5.
16. Ogunleye AO, Awobem AA. Trends of ear syringing at Ibadan, Nigeria. Afr J Med Med Sci 2004;33:35-7.
17. Ogunleye AOA, Sogebi ROA. Otic foreign bodies in children in Ibadan, Nigeria. Nigerian J Surg Res 2005;7:305-8.
18. Fox A, Bartlett P. Nurse-led ear care: training needs and the latest techniques. Prof Nurse 2001;17:256-8.
19. Adegbiji WA, Alabi BS, Omokanye HK, et al. Clinico-mycological profile of otomycosis in two tertiary health institutions in Nigeria – a prospective study. Port Harcourt Med J 2012;6:258-63.
20. Blake P, Matthews R, Hornibrook J. When not to syringe an ear. New Zeland Med J 1998;111:422-4.
21. McCarter DF, Courtney AU, Pollart SM. Cerumen impaction. Am Fam Physician 2007;75:1523-8.
22. Hegmann T. Removal of cerumen and foreign bodies from the ear. Essential Clinical Procedures E-Book 2013;346.
23. Caballero M, Navarrete P, Prades E, et al. Randomized, placebo-controlled evaluation of chlorobutanol, potassium carbonate, and irrigation in cerumen removal. Ann Otol Rhinol Laryngol 2009;118:552-5.
24. Dosemane D, Ganapathi K, Kanthila J. Knowledge, attitude and practice of ear care in Coastal Karnataka. J Clin Diagn Res 2015;9:MC01–4.
25. Propst EJ, George T, Janjua A, et al. Removal of impacted cerumen in children using an aural irrigation system. Int J Pediatric Otorhinolaryngol 2012;76:1840-3.
26. Thomas AM, Poojary B, Badaridatta HC. Facial nerve palsy as a complication of ear syringing. J Laryngol Otol 2012;126:714-6.
27. Hunt M. Tips for successful ear syringing. Practice Nurse 2005;4:10-1.
28. Mgbe RB, Umana A, Adekanye AG, OffiongME. Otomycosis - A management challenge in Calabar, SouthSouth Nigeria. Int J Third World Med 2011;9.