

Otological diseases in Nigerian children

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Abstract

A large percentage of Nigerian children with ear diseases are not likely to enjoy the services of an otolaryngologist. This is because there are few of such specialists in Nigeria and they are located in cities and mainly in tertiary health facilities, whereas most children live in the rural areas sometimes with inadequate or non-availability of primary healthcare. The problem is compounded by the fact that the children are economically dependent on their parents who are largely poor. This tends to delay early presentation to the hospital. In spite of the availability of potent antibiotics, severe life threatening complication of otitis media such as mastoid abscess and intracranial abscesses are still seen in Nigerian children.[4] Acute otitis media is often missed, because the children are usually assumed to have malaria at the onset of fever until ear discharge is obvious[5]. Hospital presentation is usually as a result of associated complication of the ear disease or the development of hearing impairment. This study aims at determining the pattern and prevalence of ear diseases in Nigerian children and the challenges of managing them.

INTRODUCTION

Preventable ear diseases have been found to be important health problems among children.[1] Hospital prevalence studies also have put nearly one third of otorhinolaryngological outdoor attendance to be comprised of the pediatric age group.[2] The ear is divided into 3 parts namely: the external ear, the middle ear and the inner ear. It contains two specialized sensory organs, the cochlear and the vestibular apparatus. Diseases of the ear can be diagnosed usually by taking a very good clinical history. Asking the patients leading questions about the disorders of the sensory systems and the related structure is helpful in diagnosis. Such leading questions include the presence or absence of the following symptoms: otalgia, otorrhea, hearing impairment, tinnitus, vertigo and facial paralysis. The inner ear and some parts of the middle ear are not accessible to clinical examination. Adequate examination of the entire child with special attention to the head and neck, can lead to the identification of a condition that may predispose to or be associated with ear disease.[3]

A large percentage of Nigerian children with ear diseases are not likely to enjoy the services of an otolaryngologist. This is because there are few of such specialists in Nigeria and they are located in cities and mainly in tertiary health facilities, whereas most children live in the rural areas sometimes with inadequate or non-availability of primary

healthcare. The problem is compounded by the fact that the children are economically dependent on their parents who are largely poor. This tends to delay early presentation to the hospital. In spite of the availability of potent antibiotics, severe life threatening complication of otitis media such as mastoid abscess and intracranial abscesses are still seen in Nigerian children.[4] Acute otitis media is often missed, because the children are usually assumed to have malaria at the onset of fever until ear discharge is obvious[5]. Hospital presentation is usually as a result of associated complication of the ear disease or the development of hearing impairment. This study aims at determining the pattern and prevalence of ear diseases in Nigerian children and the challenges of managing them.

MATERIALS AND METHODS

Consecutive patients of between the age 6months and 18years that were first-time attendees at the otology clinic of the ORL Unit of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC) Ile-Ife between December 2001 and May 2005 were recruited into this study. A structured questionnaire focusing on symptoms was administered to the patients/ parents after which the patients were physically examined. Audiological assessments were by Free Field screening, Distraction tests and Pure Tone Audiometry (PTA) depending on the age of the patient. Middle ear function was assessed using the Impedance

Audiometer (Interacoustics AT22). All the patients had tympanometry and stapedial reflex measurement.

Chronic suppurative otitis media was diagnosed in the presence of a discharging ear and tympanic membrane perforation for a period of six weeks or longer. The diagnosis of acute otitis media was made if the duration of the ear discharge was for less than 3 weeks and with hyperaemic tympanic membrane with or without a tympanic membrane perforation.

Data were analyzed using the SPSS statistical software and the results presented using descriptive statistics and percentages.

RESULTS

There were 454 cases comprising of 293 (64.5%) males and 161 (35.5%) females. The male: female ratio =1.8:1

Children of the age group 0-5years were 202 (44.5%), 6-10years were 123 (27.1%), 11-15years accounted for 57 (12.6%) and 72 (15.9%) belong to age group 16-20 years.

Fig. 1

Chronic suppurative otitis media (CSOM) was the most common otological disease recorded among our patients 154(33.9%), Sensorineural hearing loss (SNHL) was found in 162 (25.7%) cases out of which 113 (24.9%) were prelingually deaf. Acute suppurative otitis media (ASOM) was the third most common ear disease in this study accounting for 32 (7.0%) cases. Wax impaction accounted for 27 (5.9%), Secretory otitis media with effusion (SOME) was found in 24(5.3%) patients, foreign body in the ear 24 (5.3%), and otitis external was found in 4 (0.9%) of the study population. Otosclerosis 2(0.4%), cholesteatoma, tinnitus and tumor were found to be the least common otologic diseases in this study they were found in only one case (0.2%) each. Table I

Pre-morbid history of the cases with SNHL was as follows: 13 (2.6%) had a history of hyperbilirubinaemia, 18 (3.6%) had a history of a febrile illness, 25 (5%) were post meningitic cases, 30(6.0%) had measles (rubeola), birth asphyxia, and family history were found in 10 (2.0%) and 3 (0.6%) cases respectively. The remaining 355 (70%) patients had neither a history of known predisposing factor nor a positive family history of hearing impairment.

Among the prelingually deaf SNHL cases, only 15 (3.0%) had neonatal jaundice with kernicterus, 13 (2.6%) had cerebral palsy due to prolonged labor (birth asphyxia), post

measles 20(4.0%) and post meningitic 20(4.0%). In 70% of the cases there were no identifiable risk factors.

DISCUSSION

Diseases of the ear are common in children. Otitis media is one of the common diseases of infants and children. [1]

Our findings show that one- third of the children we managed were cases of chronic suppurative otitis media (CSOM). This result agrees with the findings of other workers. In a similar study in the Southeastern Nigeria, CSOM was found to be the most common ear disease[6]. In an epidemiological survey of otitis media in a semi urban part of Southwestern Nigeria, Amusa et al found CSOM to be prevalent in Nigerian children[7]. Similar findings were reported by other workers in Egypt, and Saudi Arabia [8,9]. Low social economic factors had been associated with a high prevalence of the CSOM. The prevalence of CSOM was highest in the age group 0-5years, and was found to decrease with increasing age. Even though CSOM is prevalent, the occurrence of cholesteatoma was found to be low among the children we managed. A low prevalence of cholesteatoma has also been reported among the Aboriginal children[10]. This was said to be due to the large central perforation that was associated with better middle ear aeration. The low prevalence in Africans had been attributed to this same factor[8]. Many cases however may be missed because radiological investigations and surgery are not affordable to most of the parents of these children as a result of poor socioeconomic factors. There is no satisfactory explanation for the fact that we saw more male children in our study. We do not think this is due to cultural beliefs of placing more value on the male child. It is also not proven that there are anatomical differences between the ears in both sexes. Male children being more active and adventurous may however be more predisposed to traumatic conditions which may further get complicated. Male preponderance was shown also in the study of Wright among Sierra Leonean children[11].

Sensorineural hearing loss (SNHL) was found to be the second most common reason for pediatric presentation at our otologic unit. Febrile illnesses, meningitis, viral mump parotitis, were found in 10% of children presenting with SNHL. Febrile illness, meningitis, and infectious diseases have been established to be causes of profound deafness in African children over 2 decades ago.[12,13,14,15] The infectious diseases including meningitis were associated with deafness in a previous Nigerian study as well as studies from other sub Saharan African countries [12,13,14,16,17]. These factors are

however still among the common causes of SNHL among Nigerian children. There was a positive family history in less than 1%. Genetic factors therefore are not likely to be a common aetiological factor among our children presenting with SNHL. However further studies need to be done on this. Unlike in the Caucasian where early neonatal and infant screening had led to an early diagnosis^[18], these children present very late due to lack of such coordinated screening programme. Also in our environment, it is considered unacceptable for a family to have a handicapped child; such children are hid to cover the family “shame”. This and the various other local beliefs prevent families from seeking medical help early. In the then Soviet Union a high prevalence of deaf mutism was noticed, but this was found to decrease with the improvement in the socio-economic and material condition of the populace^[19].

Ototoxicity from streptomycin to treat tuberculosis was seen in 3(0.6%) of the children reviewed. There were no other known risk factors in 70% of the cases. A similar study among Sierra Leonean children found that 21% of SNHL was due to unknown causes.^[11] Congenital causes topped the list of etiological factors in SNHL in another group of Nigeria children studied by Lasisi et al.^[20] This is different from our experience. However some of the children in whom the causes were not known could have suffered congenital problems. Limitations posed by poor availability and affordability of facilities for investigations such as CT scan, Evoked response audiometry, and genetic studies could be responsible for this.. A study among Sierra Leonean children found a decreasing incidence of measles-induced SNHL with improvement in the coverage of expanded programme on immunization^[11]. There is a need for research into the etiology of SNHL in Nigerian children.

Acute otitis media was found to be mainly a disease of the under-fives in this study. This observation agrees with the existing literature. ^[21] The low incidence of AOM compared to CSOM could be due the fact that the early symptoms of AOM are similar to that of acute malaria in the same age group. Malaria being endemic in this environment gets a lot of attention and most febrile children would have been treated for malaria before considerations for other diagnosis are made. Also routine otoscopy is not carried out by the health care giver even pediatricians who are the first to see these children. This further delays diagnosis until late when the ear discharge is obvious or when other complications would have set in. Elton and Cornell and Amusa et al found AOM in 28% and 29% respectively of febrile under five

children who would have been treated for malaria alone to have AOM. ^[5,22]

Conductive Hearing Loss was seen in 11.8% in addition to the 154(33.9%) children with CSOM, making a total of 45.7% of children presenting at the Otologic clinic. The other causes of this (apart from CSOM) comprised of wax impaction 5.9%, Secretary Otitis Media with Effusion (SOME) 5.3%, Otosclerosis 0.4% and tumor 0.2%.

Wax was found in only twenty-seven of the children in our series. Okafor however found wax impaction to be the 3rd most common ear disease in the southeastern part of Nigeria^[6]. His study population included both the children and adults and this could explain while it is more common than in this study. Wax impaction was said to be more common in blacks and Indian children than in Caucasians in a study of preschool children from Durban on the Middle Ear screening programme.^[23]

Otitismedia with effusion was diagnosed in this study based on clinical history, otoscopy and Tympanometric measurements. The prevalence of SOME was 5.3%. This prevalence is low when compared with the prevalence rate in Europe and America. Where the prevalence was as high as 10% in pediatric age group^[24,25] The prevalence in this study is slightly less than the previous findings Lagos, among Nigerian school children^[26,27]. In this study, the prevalence of SOME was found to decrease with increasing age, this agrees with existing literature^[28]. A child with SOME is usually not having pain and he is not febrile nor is he totally deaf. With the limited economic resources of the parents, they might not see the need to seek medical help. They usually label such children in our environment as “the stubborn one” who hears but fail to respond.

Foreign body in the ear is the 5th common ear disease found in this study. Over 60% occurred in children less than 5 years old. The most common foreign bodies are bean seed, maize seed, insects (cockroach), cotton buds, stone and beads. The prevalence was similar to the studies at the Lagos University Teaching Hospital (LUTH) Lagos (southwest Nigeria) and at the University of Nigeria Teaching Hospital (UNTH) Enugu in Southeast Nigeria^[6,29]. Parents are not well informed as to what to do when their wards insert foreign body in their ears. Several of these patients suffered from complications of inexpert removal by quacks. One of the patients had the meatus badly lacerated while another child had facial nerve palsy and perforation of the drum. Other traumatic lesion to the ear was due to those sustained

through road traffic accidents. Even though a slap to the ear is a common way of disciplining/punishing a child in this environment, none of the children studied presented with this complaints. It is not impossible this form of trauma to the child's ear could have initiated some of the perforation or hearing loss.

Congenital malformation of the ear constituted 0.9% of pediatric otologic diseases in this work. The most common of them was the preauricular sinus. (Fig.3) There was also a case of meatal atresia and another of third degree microtia (Fig.4). The cases of preauricular sinuses were infected. The children with the meatal atresia and microtia were presented more for the cosmetic reason than the concern for hearing. The middle ear and inner ear anomaly were not routinely screened for radiologically. This could be why cases like these are not reported from this part of the world.

Neoplasm of the ear was found to be rare. It was seen in only one patient. The tumor involved the middle ear, the mastoid antrum and extended intracranially presenting with multiple cranial nerve palsies. CT confirmed intracranial extension and the radiological differential diagnosis includes rhabdomyosarcoma, and Ewing Tumor. However the patient's parents refused surgery and opted for spiritual cure. This again may be due to inability to afford the cost of management.

Otosclerosis was seen in 0.4% of the children with ear diseases. Bilateral disease was seen in all the affected cases. Otosclerosis is not a common ear problem as seen in this study this agree with the existing literature. Otosclerosis had been established to be rare in blacks in comparison to the Caucasians. In this study it was found in children aged 15years. This also agrees with existing literature^[30,31].

Facial Nerve Palsy was found in 3(0.6%). The cause was traumatic in 0.4% while in the remaining case 0.2% it was due to complication of AOM

Tinnitus was a rare diagnosis in Children.

CONCLUSION

Chronic suppurative otitis media is the most common ear disease in children, Hearing loss is quite prevalent in Nigerian children and most of these are prelingual. Causes of this hearing loss are preventable through immunization programme, better obstetric care prompt and adequate treatment of infectious diseases. .

A lot has to be done to educate the community health

workers who are the primary care providers and about the symptoms and signs of ear diseases and to train them to recognize and refer difficult cases early

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References

1. R.S. Rao, M.A. Subramanyam, M.S. Nair, B. Rajashekar, Hearing impairment and ear diseases among children of school entry age in rural South India, *Int J Paediatric Otorhinolaryngol.* 64(2) (2002) 105-10.
2. R. Pracy, Introduction. In: Scott-Brown's Otolaryngology 6(1987), 5th edn. Ed. Evans JNG. London, Butterworth 1-3.
3. C.D Bluestone, J.O Klein, Methods of examination: clinical examination, In: *Pediatric Otolaryngology* 2nd edn. Philadelphia 1990 111-114.
4. A.O. Ibekwe, B.C.C. Okoye , Subperiosteal mastoid abscesses in CSOM, *Annals of otology rhinology and laryngology .* 97 (4) (1988) 373 - 378.
5. Y.B. Amusa, T.A.B. Ogunniyi, O.O Onayade, P.A. Okeowo, Acute Otitis media, malaria and pyrexia in the under five age group, *WAJM.* 24 (3) (2005) 40 - 42.
6. B.C. Okafor, Otolaryngology in Southeastern Nigeria. I pattern of Diseases of the ear, *Nigeria Medical Journal.* 13 (1) (1983) 11 - 19.
7. Y.B. Amusa, I.K.T. Ijadunola, O.O. Onayade, Epidemiology of Otitis media in a local tropical African population, *WAJM.* 4 (3) (2005) 36 - 39.
8. A. Belal Abdel , Otitis media In: *Belal's Otolaryngology Head and Neck Surgery: Alexandria Egypt 1992:* 20 - 22.
9. S.M. Zakzouk, M.F. Hajjaj, Epidemiology of Chronic suppurative Otitis media among Saudi Children a comparative study of 2 decades. *Int J. Paediatr Otorhinolaryngol.* 62(2002) 215 - 8.
10. G.J. McCafferty, A.N. Lewis, W.B. Coman, C. Mills, A nine year study of ear disease in Australian Aboriginal children, *J. Otol Laryngol.* 99(1985)117-125.
11. D.O Arthur Wright, B Leigh, the impact of the expanded programme on Immunisation on Measles-Induced Sensorineural hearing loss in the western area of Sierra Leone, *WAJM.* 14(4) (1995) 205-209.
12. D.R Seely, S.S. Gloyd, A.D.O. Wright, S.J. Norton,. Hearing loss prevalence and risk factors among Sierra Leonean children, *Arch Otolaryngol Head Neck Surg.* 121(1995)853-858.
13. B. Mcpherson., C.A. Holborow, A study of deafness in West Africa: the Gambian Hearing project, *Int. J. Paediatr Otorhinolaryngol.*10(2) (1985) 115 - 35.
14. M.N. Obiakor, Profound childhood deafness in Nigeria: a three-year survey, *Ear Hear.* 8 (2) (1987) 74 - 7.
15. A.O. Ibekwe, Febrile Illness a major cause of profound childhood deafness in Nigeria, *WAJM.* 17(1) (1998) 15 - 8.
16. C. Holborow, F.D. Martinson, N. Anger, A study of deafness in West Africa, *Int J of Paediatric otolaryngol.* 4 (1982)107-132.
17. T. Goetghebner, T.E. West, V. Wermenbol, A.L.Cadbury, P. Milligan, Lloyd - Evans, R.A. Adegbola, E.K. Mulholland, B.M. Greenwood, M.W. Weber, Outcome of meningitis caused by *Streptococcus pneumoniae* and *Haemophilus influenzae* type b in children in the Gambia., *Trop Med Int. Health* 5 (3) (2000) 207 - 13.
18. K. Van Naarden, P. Deconfle, K. Caldwell, Prevalence

and characteristics of children with serious hearing impairment in Metropolitan Atlanta, 1991 - 1993 *Pediatrics*. 106 (3) (2000) 616 - 7.

19. A.G. Likhachev, Deaf Mutism: In *Diseases of the Ear, Nose and Throat*: (1978)102-105, Mir Publishers.
20. O.A. Lasisi, J.K. Ayodele, G.T.A. Ijaluola, Challenges in the management of childhood sensorineural hearing loss in sub Saharan Africa, Nigeria,. *Int Journal of Pediatric Otorhinolaryngology*. 70(2006) 625-629.
21. American Academy of pediatrics: Diagnosis and Management of Acute Otitis Media, *Pediatrics*. (2004) 11451-65 Medline.
22. P. Elton, J.Cornell, Incidence of Otitis media in the under five children presenting with pyrexia of 100of at Wesley Guild Hospital, Ilesha. *Journ. of Trop. Med and hygiene*. (1978); 110 - 112.
23. D. Bhoola, R. Hugo, Excess cerumen: Failure rate of Black and Indian preschool children from Durban on the middle ear screening protocol (MESP).
24. J.O. Klein, Epidemiology of Otitis Media, In Harford R Bess H, Bluestone D, and Klein O. Eds *Impedance Screening for middle ear disease in children*, Grune and Stratton, (1978) 11-16.
25. G. Liden, Methods for Identification of middle ear

disease, In Harford R, Bess H, Bluestone D and Klein Eds. *Impedance Screening for middle ear disease in children*, Grune and Stratton Inc (1978) 23-33.

26. P.A. Okeowo, Study of Epidemiology of Otitis Media in Nigerian Children: state of our knowledge, *J Trop Paediatrics*. 1(21) (1978) 4-6.
27. O Akinlade, C.C. Nwawolo, P.A Okeowo, Tympanometric screening for otitis media with effusion (OME) in Nigerian children, *Nig. Qt. J. Hosp. Med*. 8 (1) (1998),44-46.
28. S.A. Zeizel, J.E. Roberts,E.C Neebe, R. Riggins Jr. F.W. Henderson, A longitudinal study of OME among 2-to- 5 year old African American children in child care, *Pediatrics*. 103(1) (1999) 15-9.
29. G.T.A. Ijaluola, P.A. Okeowo, Foreign body in the ear and its importance: the Nigerian experience. *Journal of tropical pediatrics*. 32(1986):4-6.
30. P.S. Roland, W.L Meyerhof, *Otosclerosis Head and Neck Surgery - Otolaryngology*. 11(1998) 2083 - 2097. acoustic impedance studies *Int. J. Pediatric Otorhinolaryngol*. 8 (1) (1984) 79 - 90.
31. V.G. Schwetzer, D.J.Lilly, *Otosclerosis in a Black child: diagnostic acoustic impedance studies*, *Int. J. Pediatric Otorhinolaryngol*. 8 (1) (1984) 79 - 90.

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