International Journal of Pediatric Otorhinolaryngology (2008) 72, 787–792

ELSEVIER

International Journal of Pediatric Otorhinolaryngology

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Otitis media as a cause of significant hearing loss among Nigerians

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Received 13 September 2007; received in revised form 4 February 2008; accepted 5 February 2008
Available online 2 April 2008

KEYWORDS
Otitis media;
Hearing loss;
CSOM;
OME

Summary Mild or worse hearing loss, defined as pure tone average >25 decibel, is seen commonly with preventable etiologies.
Settings: A tertiary care, urban referral hospital.
Methods: Retrospective analysis of prospectively collected data of individuals attending the hearing loss clinic of National Hospital, Abuja, between May 2005 and April 2007. Data matching the diagnosis of acute otitis media (AOM), otitis media with effusion (OME) and chronic suppurative otitis media (CSOM) were extracted from the database and analyzed.
Result: A total of 298 cases with primary presenting complaints of hard of hearing were seen. A total of 77 cases had hearing loss due to otitis media. 44 (57.1%) had OME, 26 (33.8%) had CSOM, while 7 (9.1%) had AOM. The observed distribution of the OME was left OME (18.1%, $n = 14$), right OME (9.1%, $n = 7$) and bilateral OME (29.9%, $n = 23$), while the CSOM is distributed into left CSOM (15.5%, $n = 12$), bilateral CSOM (11.7%, $n = 9$) and right CSOM (6.4%, $n = 5$), and AOM is distributed into right AOM (2.6%, $n = 2$), left AOM (3.9%, $n = 3$), and bilateral AOM (2.6%, $n = 2$). The mean pure tone averages for the three groups are AOM (30.5 dB), OME (41.5 dB) and CSOM (56.9 dB).
Conclusion: Otitis media is an important cause of preventable hearing loss in developing countries, and the predominance of unilateral otitis media in the left ear observed in this study deserves further studies.

1. Introduction

Otitis media, defined as inflammation involving the mucosal lining of middle ear cleft is a recognized cause of significant hearing loss [1]. Studies examining hearing sensitivity in children with OME reported that average pure tone hearing loss at 4 frequencies (500, 1000, 2000, and 4000 Hz) ranges from normal hearing (0–25 dBHL) to moderate hearing loss (41–55 dBHL) [2,3]. The 50th percentile is about 25 dB hearing level (HL), and approximately 20% of ears exceed 35 dBHL [4]. Non-complicated CSOM on the other hand causes conductive hearing

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0165-5876/$ – see front matter
doi:10.1016/j.ijporl.2008.02.008

loss in the mild to moderate category in over 50% of cases [5,6]. Even though, the hearing loss due to CSOM was believed to constitute a burden mainly in developing countries, there has been recent report from a developed country of bilateral deafness from CSOM necessitating cochlear implants [5]. Prolonged duration, severity as well as type of otitis media are associated with ossicular complications (ossicular destruction and ankylosis), and together with persistent tympanic membrane perforation contribute to the severity of hearing loss [8]. Even though significant hearing loss, defined as pure tone average >25 dB, and that affects the patient enough to be the presenting complaint, is seen commonly with preventable etiologies, there are few reports examining the distribution of otitis media presenting with significant hearing loss among ears.

2. Methodology

This study is a retrospective analysis of prospectively collected data of individuals attending the hearing loss clinic of National Hospital, Abuja, between May 2005 and April 2007. Data matching the diagnosis of acute otitis media (AOM), otitis media with effusion (OME) and chronic suppurative otitis media (CSOM) were extracted from the database and analyzed.

Acute otitis media (AOM) refers to an identifiable infection of the middle ear of duration less than 3 weeks and sudden onset.

Chronic suppurative otitis media (CSOM) refers to a chronic middle ear discharge through a perforated tympanic membrane, of duration more than 9 weeks.

Otitis media with effusion (OME) refers to the presence of a middle ear effusion without acute signs or symptoms. As all cases were seen at the hearing loss clinic run by the author, this ensured consistency with which the diagnoses were made.

All individuals had clinical otoscopy, otomicroscopy, pure tone audiometry (Diagnostic Audiometer: Interacoustics AD229e) or visual response audiometry (VRA) as appropriate for age, and tympanometry in cases with OME. Pure tone audiometry was carried out in a sound-proof booth specifically designed for audiological assessments. Pure tone average (PTA) was calculated from the average of pure tone hearing thresholds at speech frequencies — 500, 1000, and 2000 Hz — as well as 4000 Hz. Results were analyzed using SPSS software Version13.0. Analysis of the audiogram excluded patients aged 7 years and below ($n = 8$ from OME group, $n = 2$ from AOM group, and $n = 0$ from CSOM group) all of whom had VRA. This is because laterality of hearing loss is difficult to assess using VRA.

3. Results

Significant hearing loss, defined as pure tone average >25 dB, and that affects the patient enough to be the sole presenting complaint was noted in a total of 298 cases. Of these, 77 cases with no other identifiable factor other than otitis media were analyzed. 45 were males and 32 females (male female ratio, 1.4:1). The age range of the cases studied was 1—76 years (mean = 32.14, S.D. = 18.9).

Table 1 is a distribution of age and sex according to diagnosis.

44 patients (57%) had OME, 26 (33.7%) had CSOM, while 7 (9.1%) had AOM.

56% ($n = 43$) of cases with significant hearing loss had unilateral hearing loss—67% of these ($n = 29$) had left ear primarily affected, while 33% ($n = 14$) had right ear primarily affected.

Table 1 Age and Sex distribution by Diagnosis of 77 patients with otitis media and significant hearing loss

Diagnosis	Total no.	Min. age (years)	Max. age (years)	Mean age (years)	No. of males	No. of females
OME	**44**	**1**	**68**	**29.3**	**28**	**16**
Bilateral	23	1	56	20.7	17	6
Right ear	7	3	61	33	4	3
Left ear	14	7	68	41.5	7	7
CSOM	**26**	**9**	**76**	**36.9**	**12**	**14**
Bilateral	9	9	35	28.1	4	5
Right ear	5	20	68	37.2	2	3
Left ear	12	22	76	43.2	6	6
AOM	**7**	**4**	**49**	**32.2**	**5**	**2**
Bilateral	2	4	5	4.5	2	0
Right ear	2	38	49	28.6	1	1
Left ear	3	38	47	43	2	1