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Original Article

Prevalence of otitis media in school going children in Eastern Nepal

Maharjan M[1], Bhandari S[2], Singh I[3], Mishra SC[4]
[1]Lecturer, Department of ENT, Kathmandu Medical College, [2]Associate Professor, [3,4]Professor, Department of ENT, BPKIHS

Abstract
Objectives: To find out the prevalence of otitis media in school going children from lower socio-economic strata.
Material and methods: This study was carried out in a government school, Shree Naragram Secondary School in Morang district, eastern Nepal, and included 1050 children aged between 5-15 years.
Results: Of the 1050 school children, 346 children were found to have various ENT related problems. Hearing assessment revealed a conductive hearing loss on one or both sides in 114 cases (87%). Various middle ear pathologies were detected in these children, out of which chronic suppurative otitis media "Tubotympanic type" was the most common, followed by otitis media with effusion. The prevalence of otitis media in these children was found to be13.2% and those with hearing loss comprised 12.47%. Prevalence of otitis media is found to be much higher in school going children as compared to adults, and is even higher amongst children belonging to the lower socio-economic strata. Conditions complicating otitis media are more common and severe in children as compared to adults.
Conclusion: Primary ear care education to teachers, students and guardians can prevent these vulnerable children from developing hearing impairment. School based study could be one of the useful and cost-effective modality aimed at community oriented program.

Key words: otitis media, Prevalence

Otitis media is an inflammation of the middle ear cleft, with or without intact tympanic membrane. It was first described by Hippocrates as early as in 450 BC, and it continues to present itself even today as one of the most perplexing universally observed medical problems of childhood and a leading cause of hearing loss[1]. The aetiology and pathogenesis of otitis media are multifactorial and include genetic, infections, allergy, environmental, social & racial factors and eustachian tube dysfunction. It can present itself in different forms because of large variations in the nature of the disease. This could range from "silent otitis media" with clinically undetectable middle ear pathology to late stage intracranial life threatening complications like brain abscess.

According to a World Health Organization survey, 42 million people worldwide (older than 3 years) have hearing loss. The major cause for hearing retardation is otitis media[2], which is second only to common cold as a cause of infection in childhood. It is estimated that about 90% of people have at least one episode of otitis media by their 2nd birthday. For children less than 15 years old, the most frequent diagnosis made in clinical practice is otitis media[3].

Children from developing countries having unfavourable environments witness an extraordinarily high incidence of severe episodes of otitis media with frequent perforation of tympanic membrane and persistent suppurative discharge and necrotizing process in the middle ear, including destruction of ossicles. Children from lower socio-economic groups being more vulnerable to otitis media, they have to be given special care to prevent hearing retardation. Otitis media gradually and silently affects the hearing process, which, in turn, adversely affects mental status, socialization and education in such children. After every episode of otitis media in children, fluid persists in the middle ear for weeks to months. This leads to conductive hearing loss. Poor hearing retards development of speech and impacts adversely upon mental ability and self-confidence.

Correspondence
Dr. Milan Maharjan
Lecturer,
Department of Otolaryngology-Head and Neck Surgery
Kathmandu Medical College and Teaching Hospital
Sinamangal, Kathmandu, Nepal
E-Mail: puntoo@hotmail.com

In the Nepalese context, approximately 16% of the population above the age of 5 years suffers from otitis media. More than 55% of these cases occur in school going children, most of them belonging to the lower socio-economic class[4].

Material and methods

The study was conducted in "Shree Naragram Secondary School", located in Morang district, eastern Nepal. Most students of this school belong to families of the lower socio-economic strata. A total of 1050 children aged between 5 – 15 years were selected for the study. A weekly visit was made to the school by a team of ENT surgeons and audiologists. Audiological assessments were carried out using "MT 10 hand held tympanometer" and "ARPHI 500 MK IIS portable pure tone audiometer". Prior to commencement, the nature of the study was explained to the teachers and guardians concerned and a primary ear care orientation program was given to all of them. All the students serially underwent clinical examination and public health and ear care education orientation program. Students with positive otological and audiological findings and with previous history of ear problems were short-listed for detailed ENT examination. The basic epidemiological data was collected and statistically analyzed.

Results

Of the 1050 school children, 346 children were found to have various ENT related problems. Of these, 139 children with suspected otitis media were short-listed for detailed otologic examination. The prevalence of otitis media in these children was found to be13.2% and those with hearing loss comprised 12.47%. Out of the 139 children short-listed, the largest proportion - 71.2% (99 children) - belonged to the age group 13-15 years.

Various pathologies were detected in these 139 children, out of which chronic suppurative otitis media "Tubotympanic type" was the most common. The disease was unilateral in 32 cases and bilateral in 17. Otitis media with effusion was noticed in 34 (24.5%) cases. This was more common among the younger age group. Chronic suppurative otitis media "atticoantral type" was seen in 11 cases, unilateral in 9 cases and bilateral in 2 cases. A combination of chronic suppurative otitis media atticoantral in one ear and tubotympanic in the other was also observed in 3 children. Prevalence of hearing loss was found to be 12.47%. Hearing assessment revealed a conductive hearing loss on one or both sides in 114 cases (87%). Hearing loss was of only of mild degree in more than 80% of children and mixed hearing loss was noticed in 13 (10%) cases.

Table 1: Otoscopic examination

Otoscopic findings	**Positive findings**	**Percentage**
otitis media with effusion	34	24.5
Healed perforation	25	18
Retracted tympanic membrane	14	10
CSOM “TT”	49	35.2
CSOM “AA”	11	7.9
Bilateral CSOM “TT” & “AA”	3	2.2
CSOM “TT” & Healed perforation	3	2.2
Total	**139**	**100%**

Fig 1: Age distribution

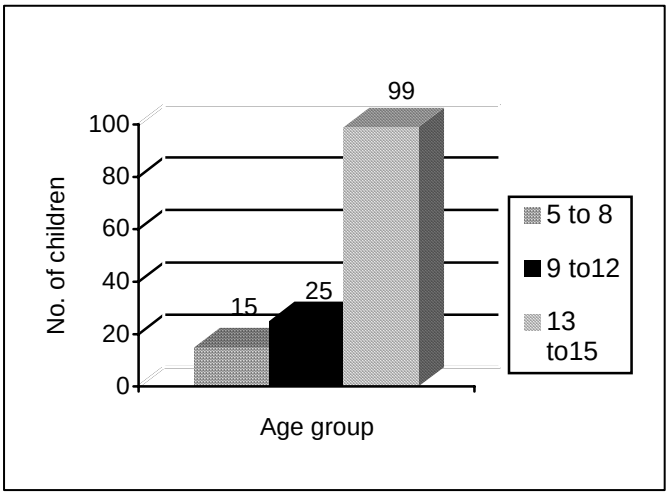
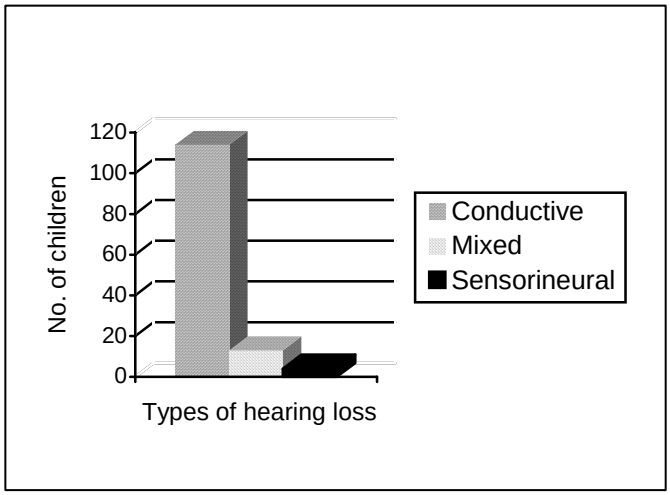


Fig 2: Audiological status



Discussion

Otitis media is one of the most common diagnosis for illness made by physicians who provide health care for children. It was found to be second only to common cold as a cause of infection in childhood[3]. It is particularly common in poor communities in the developing world.

Prevalence of otitis media is variable; different studies and different racial groups have shown varying prevalence rates. In this study, prevalence of otitis media amongst school going children was found to be 13.2% and prevalence of hearing loss 12.47%. The study was carried out in a government school in Morang district having a multiethnic population, where 85.6% of students belonged to lower socio-economic class families. Hence the prevalence of otitis media was found to be high.

Results of Mishra et al[5] in a study, "School age Bhutanese refugees in eastern Nepal", were similar to this study. Prevalence of otitis media was found to be 12.13%. A study in a village in Southern India by Abraham et al[6] identified prevalence of hearing loss among school children to be 11.9%, with the most common cause of deafness being otitis media. Prevalence of otitis media in rural areas of India and Nepal is similar. This could be due to similar risk factors in rural areas of both countries. Olusanya et al[7] screened school children in Lagos, Nigeria, and

found prevalence of hearing loss to be 13.9%. otitis media was observed in 20.9% of these children. Similarly Okur et al[8] from Turkey carried out a study on school children and found prevalence rate of 10.4%. Contrary to these studies, a relatively low incidence was observed by Kalpana et al[9] (4.75%) and higher incidence was observed by Zakzouk et al[10] (19.6%). A study by Ramesh et al[4] also showed a lower prevalence rate of only 7.7%. Low incidence of otitis media in his study could be because the study included general population of all age groups. Similar results were found in a study carried out by B. P. Koirala institute of Health Sciences in Sunsari district, which showed prevalence of otitis media as10.3%[11]. Community based studies like this is very cost-effective and can cover a large population in a very short duration. Education on primary ear care and also inclusion of ear care tips in the health education can provide the valuable message to the children who are affected the most by otitis media. This should dramatically decrease the incidence of otitis media in this group of population.

Conclusion

Otitis media is one of the commonest illnesses affecting school going children. The prevalence has been found to be high in this age group, especially if members of the group studied belong to the lower socio-economic class. This could be due to enhanced risk factors inherent in children of the lower socio-economic class. Otitis media is the main cause for deafness in this age group. Primary ear care education to teachers, students and guardians as well as early diagnosis with prompt treatment of otitis media can prevent these vulnerable children from developing hearing impairment and its resultant complications. School based study could be one of the useful and cost-effective modality aimed at community oriented program. Creating awareness among the rural community against the ear disease through teachers, guardians and students and asking them to attend the nearest health post if any ear related problems occurs is as much as necessary as to provide regular ear service to the community.

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