Prevalence of otitis media with effusion in primary school children in Pokhara, Nepal

Abstract

Objective: Otitis media with effusion (OME) is a common cause of morbidity in children and complications which may arise include hearing loss and developmental delay. A high prevalence of hearing impairment in Nepal has been previously reported and linked closely to OME in the school age group. The aim of this study was to determine the prevalence of OME in primary school children, in Nepal.

Methods: Two schools were randomly selected in a cross-sectional survey of large schools in Pokhara. Our sample included all 432 children, aged between three and eight years in the lower three stages of school. Information relating to established risk factors were recorded from each child and a clinical examination was performed which involved otoscopy and tympanometry. Children with a type B tympanogram tracing were diagnosed with OME.

Results: 372 children were included in the analysis. Overall prevalence was 38.2% (95% CI 33.2–43.1), with a maximum prevalence of 57.8% in four year olds. Prevalence decreased significantly with age ($\chi^2 (1) = 20.106, p<0.001$). Multivariate analysis identified age to be the only significant risk factor in our study.

Conclusions: Prevalence of OME has a higher rate in Nepal than previously reported. A large proportion of Nepalese children appear to be at risk of developing long term hearing problems. Prevalence rates decreased linearly with age, a trend confirmed by other studies, however, other established risk factors did not achieve statistical significance in our population. Further investigations could determine disease aetiology in this population to better assess long term implications.

Background

- Glue ear is the accumulation of fluid in the middle ear, with the absence of symptoms and signs of acute infection (1).
- Hearing loss is a common complaint and may subsequently affect a child’s speech and language development, and school performance (2,3).
- A Nepalese survey conducted in 1991 (4), estimated prevalence rates of hearing impairment to be 16.6%. In children 5-15 years old, 5.2% of hearing impairment was found to be associated with otitis media or it’s sequelae.

Method

- **Design:** Cross-sectional survey
- **Setting:** Two large randomly selected urban schools in Pokhara, Nepal’s 2nd largest city
- **Subjects:** All children in the stages of nursery, LKG and UKG (4-8 years)
- **Ethical Approval:** Approved by Internal Ethics Review Committee at the University of Birmingham
- **Data collection:**
  - Each child was asked a few questions with the help of a pictorial questionnaire.
  - Clinical examination with an otoscope and tympanometer. Equipment management and data interpretation training received at Walsall audiology department.
- **Categorisation of middle ear states as follows:**

  1. Normal: Type A curve
     - Mid ear pressure (MEP) ≤ -150 to +100 daPa
     - Compliance peak: 0.2 to 1.4 cm$^3$ / s
     - Ear canal volume (ECV) 0.4-1.0 cm$^3$
  2. Glue ear: Type B curve
     - MEP: ≤-150 daPa
     - Compliance peak: ≤ 0.2 cm$^3$
     - ECV: Normal
  3. ET dysfunction: Type C curve
     - MEP: ≤-100 daPa
     - Compliance peak: ≤ 0.2 cm$^3$
     - ECV: Normal
  4. Perforation
     - Flat curve
     - ECV ≥ 1.0 cm$^3$
  5. Infection
     - Pain/discharge
     - Type B curve
     - ECV: Normal
  6. Excess cerumen
     - Tympanic membrane not visualised
     - ECV: Small
     - Blocked sign on tympanometer
  7. Cannot decide
     - Signs of excess cerumen
     - Type B curve
     - ECV: Normal

Discussion

It is possible that OME has a greater prevalence in Nepal as a result of additional unidentified risk factors or confounding factors. Rovers et al [7] concluded in their international review of risk factors for otitis media, that the differences between populations, are often overshadowed by other culturally or demographically significant factors.

Implications

- The high prevalence signifies that a large proportion of children are at risk from the long term complications of OME.
- The SLT division of the INF could possibly expand their current project to target a greater number of children and create awareness amongst teachers and parents of the symptoms of chronic ear disease.
- The community ear care programme in Nepal could also incorporate raising awareness of this problem to target populations, which can be delivered on a national scale [8].

References