



## Reconsidering management for otitis media with effusion in children

Apart from the common cold, otitis media is the most frequently diagnosed illness in a country like the United States with treatment by myringotomy and insertion of tympanoplasty tubes being the most frequent operation in children beyond the neonatal period<sup>1,2</sup>. The highest rate of occurrence is in the first two years of life and, in close agreement with several previous studies, a large-scale investigation by Paradise and colleagues<sup>1</sup> revealed that 48% of infants aged 6 months and 79% of infants aged 12 months and 91% of infants aged 24 months presented with at least one episode of otitis media with effusion (OME). This means that nine in every ten children at the age of two years have had at least one episode of OME which can be transient or can persist for several months. These figures may be even higher in a developing country like South Africa with large sections of disadvantaged communities since OME has been associated with poor socioeconomic circumstances.

Until recently, guidelines for intervention in OME for children recommended minimizing the possible effects on developmental outcomes due to the mild conductive hearing loss caused by OME by prompt insertion of tympanostomy tubes in infants and young children presenting with persistent middle-ear effusion (MEE) for more than 3 to 4 months<sup>1</sup>. Since evidence regarding the effects of a conductive loss due to OME in young children was inconclusive and a dearth of evidence indicating a favourable effect on development due to insertion of tympanostomy tubes resided, a large scale clinical trial was initiated in 1991 by Paradise and colleagues.

The longitudinal clinical trial by Paradise and colleagues enrolled a large cohort of healthy infants whose middle-ear status was monitored at least monthly until 3 years of age. The randomisation was between infants with persistent MEE who received prompt insertion of tympanostomy tubes and those receiving tympanostomy tubes 6 months later for bilateral MEE and 9 months later for unilateral MEE. Extensive developmental assessments were conducted at 3, 6, and 9 to 11 years of age. The results were published in 2001, 2005 and 2007 for developmental outcomes at 3, 6 and 9 to 11 years of age, respectively<sup>2,3,4</sup>.

These reports indicated that early tympanostomy tube placement compared to delayed tube placement in the children with persistent MEE did not result in a significant effect on developmental outcomes up to 9 to 11 years of age. The developmental areas assessed at the various age intervals included cognitive, language, speech, phonological, and psychosocial development as well as measures of literacy, attention, auditory processing skills, social skills, and academic achievement. The consistency of these findings by Paradise et al. provides convincing evidence, in contrast to many previously held convictions, that OME does not cause developmental impairments

and prompt insertion of tympanostomy tubes does not therefore improve developmental outcomes up to 9 to 11 years of age in otherwise healthy newborns<sup>2,3,4</sup>.

Limitations of the trial must, however, be acknowledged before findings are generalised. The study was conducted on healthy newborns and cannot be generalised to children with additional risk factors, such as language or other developmental delays, and the possible favourable effect of prompt tympanostomy insertion in such cases. In addition to this the study included very few cases with hearing loss reaching 40 decibels (dB) or more due to OME and therefore could not address the question of whether this degree of loss may lead to impairments in developmental outcomes.

As a result of these and other corroborating findings the guideline for treatment of OME was revised jointly by the American Academy of Family Physicians, the American Academy of Otolaryngology-Head and Neck Surgery, and the American Academy of Pediatrics<sup>5</sup>. The revised approach to intervention for persistent MEE is now more conservative leaving the risk of surgery and anaesthesia for insertion of tympanostomy tubes as a last resort. Recommendations include follow-up visits for determining the laterality and duration of the effusion and the risk of speech, language, or learning difficulties not related to otitis media. In otherwise normal children a hearing test must be performed if the effusion persists for 3 months and must be continually monitored at 3- to 6-month intervals until either a bilateral hearing loss of 40 dB or higher is documented, a speech or language delay is diagnosed, a structural abnormality of the eardrum develops, in which case the surgical placement of tympanostomy tubes is recommended. Prescription of antihistamines, decongestants, antimicrobials and corticosteroids are not recommended for routine management of OME due to poor long-term efficacy and the growing concern of increasing microbial resistance<sup>5,6</sup>.

The conservative treatment recommended for OME in children may ultimately result in significant healthcare savings for South Africa in terms of surgery and medication costs currently allocated to the management of this prevalent condition. Care must however be taken to diligently monitor children with OME within a collaborative team approach including the family physician, paediatrician, otolaryngologist, audiologists and speech-language therapist to ensure developmental outcomes are not compromised due to poor surveillance.

**De Wet Swanepoel, PhD**

Senior Lecturer

Department of Communication Pathology

University of Pretoria

### References

1. Paradise JL, Rockette HE, Colborn DK, Bernard BS, Smith CG, Kurs-Lasky M, Janosky JE. During the First Two Years of Life Otitis Media in 2253 Pittsburgh-Area Infants: Prevalence and Risk Factors. *Pediatrics* 1997;99:318-333
2. Paradise JL, Feldman HM, Campbell TF, Dollaghan CA, Colborn DK, Bernard BS, Rockette HE, Janosky JE, Pitcairn DL, Sabo DL, Kurs-Lasky M, Smith CG. Effect of early or delayed insertion of tympanostomy tubes for persistent otitis media on developmental outcomes at the age of three years. *N Engl J Med* 2001;344:1179-87
3. Paradise JL, Campbell TF, Dollaghan CA, Feldman HM, Bernard BS, Colborn DK, Rockette HE, Janosky JE, Pitcairn DL, Kurs-Lasky M, Sabo DL, Smith CG. Developmental outcomes after early or delayed insertion of tympanostomy tubes. *N Engl J Med* 2005;353:576-586
4. Paradise JL, Feldman HM, Campbell TF, Dollaghan CA, Rockette HE, Pitcairn DL, Smith CG, Colborn DK, Bernard BS, Kurs-Lasky M, Janosky JE, Sabo DL, O'Connor RE, Pelham WE. Tympanostomy tubes and developmental outcomes at 9 to 11 years of age. *N Engl J Med* 2007;356:248-261
5. American Academy of Family Physicians, American Academy of Otolaryngology-Head and Neck Surgery, American Academy of Pediatrics Subcommittee on Otitis Media with Effusion. Clinical practice guideline: otitis media with effusion. *Otolaryngol Head Neck Surg* 2004;130:S95-S118
6. McCracken GH. Treatment of acute otitis media in an era of increasing microbial resistance. *Pediatr Infect Dis J* 1998;17:576-579