

## **OTITIS MEDIA WITH EFFUSION (GLUE EAR)**

### **Aetiology**

The fundamental pathology is Eustachian tube dysfunction. The exact cause for this remains in doubt, but there are associations with recurrent upper respiratory tract infections, parental smoking, allergy and reduced overall nasopharyngeal dimensions. The adenoid is recognized as an important contributor to otitis media with effusion (OME) because it is a source of pathological bacteria, and not because it mechanically obstructs the orifice of the Eustachian tube. There is no difference in effusion rates between those children who have large versus small adenoids.

### **Pathology**

The prevalence of OME is highest in young children (40% at 2 years) and decreases with age so that it is uncommon in teenagers (1% at 11 years). The prevalence is also higher in the winter months, in boys, in children with cleft palate or Down's syndrome, in those with allergy and in the children of parents who smoke. The underlying Eustachian tube dysfunction leads to a chronic reduction in middle-ear pressure. This ultimately causes an inflammatory response in the middle-ear mucosa and the production of glue: thick, tenacious mucus rich in glyco- and mucoproteins and containing inflammatory cells which fill the middle ear cleft. In most cases (90%) spontaneous resolution is the rule, punctuated by numerous remissions and relapses. In a small number of persistent and severe cases there is progressive atrophy and retraction of the tympanic membrane. Sequelae such as retraction pockets and even cholesteatoma may ultimately develop.

### **Clinical features**

The presence of fluid in the middle-ear cleft leads to a conductive hearing loss of variable severity and is responsible for most of the clinical features. Hearing impairment, whether persistent or intermittent, noticed by parents, relatives or teachers or picked up at routine screening is the presenting symptom in over 80% of cases. Learning difficulties and speech delay account for the bulk of the remainder, and recurrent infections and otalgia are uncommon features of this condition (1–2%) although they are common complaints in childhood. Most cases present between the age of 3 and 6 years, with the more severe cases tending to present earlier. Examination may or may not reveal a middle-ear effusion depending on the activity of the process at consultation. The otoscopic appearance of the effusion varies. The tympanic membrane can look dull red, grey or an amber yellow colour. It can bulge forward or be retracted. Attic and posterior retraction pockets may occur, but bony erosion is relatively unusual. Air bubbles or a fluid level can occasionally be seen.

### **Investigation**

An audiogram appropriate to age and impedance audiometry are all that is required. Pure tone audiometry if feasible will show a conductive hearing loss. Impedance audiometry will show a flat tympanogram (type b) which is typical of otitis media with effusion and helps distinguish the disease from Eustachian tube dysfunction and otosclerosis.

### **Management**

Management should be appropriate to the severity of the symptoms and should always take account of the natural history of the condition towards spontaneous resolution. For many children explanation and reassurance to the parents are all that is required. A review visit after 3 months is useful to establish the persistent nature of the patient's condition, in particular a persistent hearing loss. Medical treatment has little role to play in this condition: antihistamines and decongestants have no useful effects and antibiotics produce short-term improvements, but do not affect the long-term

course. Auto inflation of the Eustachian tube using the Otovent device has been shown to give useful results, but is significantly less effective than grommets. Compliance can also be a problem. In the more severe cases the insertion of ventilation tubes improves hearing and shortens the overall duration of the condition. The benefits of ventilation tubes may be augmented by combination with adenoidectomy. The benefits of adenoidectomy are greatest between the ages of 4 and 8 years. Tonsillectomy does not seem to influence the condition. Grommets should be used rather than T-tubes, which are associated with an unacceptably high rate of residual perforation (up to 50%). The main complications of grommets are infections and the development of tympanosclerosis (which is found in 30–40% of children 1 year after grommet insertion). Tympanosclerosis is associated with multiple episodes of grommet insertion and intra-tympanic bleeding at myringotomy; mini-grommets seem to cause less but tend to extrude sooner. Infections should be treated by aural toilet and antibiotic/steroid ear drops in the first instance, but grommet removal may be required if the condition fails to settle.

#### **Follow-up and aftercare**

Grommets require little aftercare. There is no good evidence that swimming with unoccluded ears increases the risk of infection, although some form of ear plug should be worn when shampooing (soap reduces the surface tension of the water). Grommets extrude after approximately 9–12 months following which some form of review is required to recheck the hearing. A sizeable proportion of affected children (25%) will require further subsequent grommet insertion.