

## **MIDDLE EAR EFFUSION: ITS MANAGEMENT**

Otitis media with (middle ear) effusion (OME) occurs with a higher incidence (50-61%) upto the age of 6 years in children(1-3). Different studies(1-5) in population have indicated that children get atleast one episode of otitis media in the range of 76 to 95% by the age of 6 years. If an infant gets a middle ear infection before one year of age, about 50% of such children in their later stage are said to be susceptible to chronic otitis media(1). The common microorganisms, involved in OME are *Streptococcus pneumoniae* and *Hemophilus influenzae*. Besides bacterial and viral infection, eustachian tubal anatomic and functional disorders alongwith nasal allergic conditions and adenoids are considered responsible for otitis media with effusion in children(4). Otitis media with effusion causes a mild to moderate hearing loss.

Although the hearing loss is initially temporary and the disease resolves by itself in a significant percentage of patients, it continues to cause problems in 5 to 15% of children with persistent or progressive hearing loss and with other accompanying sequelae like perforation of pars tensa, retraction pocket, adhesive processes, tympano-sclerosis and also cholesteatoma(1-4). Parental suspicion of a child's hearing loss and the teacher's observation on the child's poor learning process at school alongwith

history of pain in the ear during upper respiratory infection or seasonal nasal allergy with otoscopic evidence of bulging or dull looking or retracted or thickened tympanic membrane are the key informations for its diagnosis. It can also show congestion and evidence of mucoid discharge through a small perforation. Impedance audiometry shows a B type curve and myringotomy confirms the presence of the disease.

### **Incidence**

In the UK, a 50% incidence of OME in children aged 5-7 years is seen although a lower incidence in different other countries has been reported(1,3). In the USA, a high incidence in the range of 53 to 61% of OME in children between 2 and 6 years of age was reported(1,2). It is also reported to occur more in males. After the age of 7 years the incidence gradually decreases(1,3-5). We have seen a low (12%) prevalence of OME in school children aged 5-8 years. Often its prevalence varies in the same population at different time of evaluation. During certain seasons its frequency increases as the child gets an upper respiratory tract infection(5). After about 10 years of age, OME is seen less frequently but at that stage its complications or sequelae are more experienced in clinical practice(1).

### **Etiology**

The major factors responsible for OME are eustachian tubal disorders both functional and anatomical together with infections both viral and bacterial and allergy (3-7). Adenoid hyperplasia(1) due to infection results in mechanical obstruction as well as bacterial inflammatory changes

owing to neural and immunological mechanisms in eustachian tubes and middle ear causing hearing loss. Both viral and bacterial isolates were grown from middle ear fluids(7). Middle ear mucosal immunity being lowered by inadequate antibiotic use is also said to be responsible for OME although long term use of antibiotics is recommended as a therapy of the disease(8-10). Immunologically, mucosal glandular and goblet cell activities increase and it results in middle ear effusion. It is also believed that adenoids and other lymphoid tissues in the naso-pharynx act as a source of bacterial antigen, causing effusion(8-10).

### **Clinical Symptoms**

Latent or overt hearing loss is the usual symptom which often fluctuates in severity. Parents or teachers in school may notice such disability from the child's performance at home or school. Child's speech development or educational progress may be slow(1). At times hearing loss being mild to moderate in its severity, may be detected only at routine check ups. Acute exacerbation associated with a head cold or a minor upper respiratory tract infection causes ear pain. Episode of allergic rhinitis or swimming can aggravate the disease processes and the presence of OME is recognized by a physician on otoscopic examination(3-5). Indirect symptoms such as shouting, insularity and increasing the volume of the television or radio by the child are also noticed in OME(1-5,9,10),

### **Diagnosis and Screening**

Diagnosis and screening are mostly done by clinical examination of the tympanic membrane for its look, lack of mobility and change of its position. Otoscopic and microscopic evaluations help to establish the presence of fluid behind the drum.

Alteration of light reflex, retraction and dullness of the pars tensa are usual findings in chronic patients(1,9,10). Negative Rinne test(5,12) may be helpful in children above 4 years of age who are expected to co-operate for this tuning fork test. Although pure-tone audiometry can provide the degree of loss of hearing, it does not identify otitis media with effusion. It, however, helps to monitor therapy benefit. Impedance audiometry(1) is the diagnostic test showing a B-type of curve usually bilaterally. Myringotomy is the "Gold Standard" for diagnosis(1-5).

### **Management**

The management of OME is a controversial topic in otology(9-16). Seasonal variation, relapses and remissions after treatment do occur. The medical treatment is directed towards controlling the infection, allergy and reducing edema and inflammation of the eustachian tubes, nasopharynx and nose and improving ventilation. Autoinflation or nasal drops are used for this purpose. Antihistaminics systemically with topical nasal steroid-spray are useful in many patients. Antibiotic therapy for a longer period is also recommended for successful results(1,9,10). Besides, erythromycin and amoxycillin, newer cephalosporins have shown better results in recent times to control the disease(5). Systemic steroid are being used by many who claimed cure of the disease; but it is usually not recommended as a routine therapy which is ordered mostly in intractable cases(5).

### **Surgery**

Myringotomy and insertion of ventilating tubes are standard surgical therapy today especially for those cases which do not response to medical therapy or are

detected at a later stage of the disease(1,5,9,14).

Adenoidectomy and tonsillectomy are done in selected cases in which it is considered the causative factor. Now-a-days in younger children, adenoidectomy together with use of ventilating tubes is done to effect lasting results(1,5,9).

Preventive measures are always welcome but unfortunately it is not easy to effect prevention of such a multifactorial disease(2,4). Vaccines against *Streptococcus pneumoniae* and certain viruses which are considered to be associated with otitis media may control the disease to some extent (1,3,9). Early detection and adequate therapy of acute upper respiratory tract infection and control of the nasal allergy in children can significantly reduce the incidence of this disease. Awareness of the disease and its early treatment is another aspect that needs to be highlighted and educational programmes in this direction in the community and school must be started.

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