

Original Article

Medical Management of Otitis Media with Effusion

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ABSTRACT

Objective: To evaluate the benefits of watchful waiting with medical management prior to surgical intervention in children with otitis media with effusion.

Methods: A total of 60 children with otitis media with effusion, aged newborn–10 years, were selected for this study. All children had meticulous follow ups by the same otolaryngologist and pediatricians.

Results: A total of 30 (50%) of our children showed

complete recovery with medical management alone, 20 (33.5%) responded after the first trial of medical therapy. The remaining 10 children (16.5%) responded after the second course of medical therapy. The 25 children (41.3%) who failed to show improvement were recommended for surgery. A total of five children (8.5%) showed spontaneous recovery on watchful waiting.

KEYWORDS: ears, eustachian tube, otitis media with effusion (OME), tympanic membrane

INTRODUCTION

Otitis media with effusion (OME) is defined as the presence of fluid behind an intact eardrum without signs or symptoms of acute infection (otalgia, fever, and irritability)^[1]. Other names given to the same condition are glue ear, fluid in the ear and serous or secretory otitis media. A total of 25% of these cases are accidentally discovered during routine check ups^[2]. Despite the apparent absence of symptoms, the potential impact on hearing, speech, language and comprehension highlights the need for timely intervention. It is the most common chronic otological condition in children with the exception of viral upper respiratory tract infections. It is characterized by an alteration in the mucociliary system in middle ear cleft where fluid accumulates with negative pressure^[3].

The risk factors that contribute to OME are low socioeconomic status, and repeated exposure to other children, at home or in day care, and bottle-feeding. Certain diseases like cleft palate, immunodeficiency, ciliary dyskinesia, Downs syndrome and cystic fibrosis are all associated with increased risk for OME. There are many theories of etiology, e.g. bacterial^[4], immunological^[5], allergic^[6], viral^[7], eustachian tube dysfunction^[8], nasopharyngeal obstruction^[9], etc.

Initial trial of medical therapy with watchful waiting for three months should be practiced prior to surgical intervention. In light of the fact that almost 50% of our children improved on medical

management alone, very compassionate and individualized care is suggested for every patient.

MATERIALS AND METHODS

Over a period of 18 months from September 1999 to February 2001, 60 children, from newborns to 10 years, were selected from our center for this study. A total of 37 (61.6%) children were Kuwaitis. A total of 33 (55%) were under the age of five years, while 27 (45%) were above the age of five years. Out of these 27 children only 4 children were above the age of eight years. All these children belonged to the middle and high socio-economic group. At least one family member was a smoker. There was no history suggestive of overcrowding at home or day care center enrollment. These children were referred to the otolaryngologist by pediatricians and family practitioners for various symptoms (Table 1). Two children had undergone adenoidectomy and myringotomy earlier. One child with a cleft palate had undergone bilateral myringotomies with ventilating tubes on more than one occasion.

Every child had complete ear, nose and throat examination by the same ENT specialist. All children had detailed assessments under surgical microscope aided by X-ray of soft tissue neck for adenoidal enlargement and an audiological assessment. All the children were subjected to automatic tympanometric screening. The cooperative children above the age of five years

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had pure tone audiometric assessments as well. Four children (6.7%) with psychomotor delay were subjected to brain stem evoked potential audiometry (1 child was an operated case of meningomyelocele with hydrocephalus, 2 children with Downs syndrome and 1 child with severe hypoxic ischaemic encephalopathy and gross psychomotor delay). Three compulsory comprehensive follow-ups were requested at four weekly intervals for a period of three months.

RESULTS

The diagnosis of otitis media with effusion was made in our study group on the basis of any of the following clinical findings in the ear with tympanometry: dull tympanic membrane, loss of light reflex, split light reflex, loss of landmarks of the eardrum, blue drum, and/or alteration in the mobility of tympanic membrane. While 10 ears were normal, 30 (50%) children had unilateral ear disease while the other half had bilateral ear involvement.

On X-ray examination, 28 (45%) children showed large adenoids, while 30 (50%) children had medium to small adenoidal hypertrophy. The two children who already had undergone adenoidectomy did not reveal any further adenoidal enlargement.

On audiological assessment, 75 ears showed type B curve and 10 ears showed type C curve. Only four ears showed normal tympanogram. Only 12 (20%) children above the age of five years cooperated for pure tone audiometry and were found to have an air bone gap of 20-30 decibels.

After initial evaluation, a course of oral antibiotics with local decongestant and antihistaminic with mucolytics was given for a period of 10 days. Being a safer broad-spectrum antibiotic, Amoxicillin was the first choice in all children except five who had previously reported diarrhea. However, no septic work up was done before starting antibacterial therapy. On the first follow up, at four weeks, 20 children (33.3%) showed improvement. Those who failed to show any response were given augmentin (amoxicillin and clavulanate) along with the same supportive drugs for the second trial of medical therapy. On the second follow up, 10 (16.6%) showed clinical improvement.

The 30 remaining children (50%) were advised watchful waiting for another four weeks. On the third follow up, spontaneous recovery was noted in five (8.5%) children. The 25 (41.3%) children who did not show any improvement during three months of medical management were advised to have surgery. Two patients who had bilateral ear disease with type B curve on tympanometry did

Table 1

List of symptoms for which patients were referred to ENT Specialist

Symptoms	No. of Patients	Percentage
Mouth breathing + snoring	48	(80)
Diminished hearing	36	(60)
Tinnitus	6	(10)
Epistaxis	4	(6)
Earache off and on	15	(25)
Poor speech	4	(6)
Allergy	6	(10)
Asymptomatic	10	(15)

not show any fluid behind the eardrum on myringotomy, most likely due to self-resolution.

DISCUSSION

Otitis media with effusion is a very common problem in children. It denotes the presence of chronic effusion in the middle ear cleft. OME implies a silent sub-acute stage of OM without the acute symptoms of fever or severe otalgia. Its detection involves an assessment of tympanic membrane appearance and middle ear function. Although an opaque or discolored membrane with air bubbles or an air fluid level is confirmatory, effusion with more subtle visual findings may be missed unless middle ear function is checked by pneumatic otoscopy and tympanometry^[10]. The total sensitivity of pneumatic otoscopy with tympanometry is almost 80%. The predisposing factors in our patient were mainly adenoidal hypertrophy seen in over 90% children. Recent literature concludes that the role of adenoidal tissue in the pathogenesis of OME is primarily as a focus of infection^[11]. The adenoids positioned in the posterior nasopharynx serve as an area of contact between inhaled bacterial and lymphoid cells. Its proximity to the orifice of the ET, when combined with a mechanism for the transport of mucus into the middle ear, provides a logical link between bacterial or viral colonization of the adenoids and OME. Over all, 70% of ears with OME have been reported culture positive^[12]. Although we could not assess the type of infective organism in our patients, 50% of our patients showed good response to medical management.

Allergy has long been recognized as one of the causative factors of OME. Nasotubal mucosal congestion associated with inhalant allergy leads to dysfunction of ET, thus interfering with the exchange of gases between the middle ear and the nasopharynx during swallowing. Both the dynamic and passive functioning of ET is affected^[13]. Many authors have noticed an association between allergy in the upper airway and OME. In our study,

10% of the children were found to have allergic histories. There are some reports showing no relationship between allergy of upper airway and OME^[14].

OME is common in infants who have cleft palate^[15]. This is caused by an abnormal opening mechanism of the ET, resulting in functional obstruction. Palate repair seems to improve the middle ear condition; but the middle ear disease may persist or continue to recur after surgery. Parents of the cleft palate girl in our study postponed the advised surgery for one ear since the ventilating tube on the other side was in place and child was doing well at school.

Children with craniofacial malformation and other syndromes without cleft palate also have a higher incidence of OME. These children deserve periodic evaluation for detection and treatment of OME^[16]. Both the children with Downs Syndrome refused the surgical intervention though one of them was fixed with a hearing aid.

Recurrent OME has been reported in-patients who have disorders like immotile cilia syndrome as well as Kartagener's syndrome^[17]. In these patients, compromised mucociliary clearance because of immotility of the ET and middle ear cilia results in OME. Recurrent OME is more prevalent among children suffering from immunodeficiency. Our one child with hypoxic ischaemic encephalopathy and gross psychomotor delay who had been getting frequent upper airway infections with OME and the other child with operated myelomeningocele and hydrocephalus were both subjected to myringotomy with insertion of ventilation tubes.

Most episodes of acute OME (less than three weeks duration) or subacute OME (up to 2 to 3 months duration) can be managed with watchful waiting. More than 80% of the effusions resolve spontaneously within several months^[18]. Bilateral OME, day care attendance and more than two weeks of effusion are risk factors for developing chronic OME but even children with all three conditions should be treated with several months of watchful waiting prior to surgical intervention. Only 8.5% of our children showed spontaneous recovery over a period of three months. We could not wait longer in these cases due to parental pressure. Ultimately, 22 cases were subjected to surgical intervention.

CONCLUSION

OME is a common and important disease in children. Children with OME deserve a thorough evaluation and management. Primarily, medical management along with watchful waiting up to

three months is suggested for all except the children with any abnormalities such as cleft palate and Down Syndrome. Surgery should be offered only to those children who do not respond to medical management.

In conclusion, there is a need for better awareness and health education of the parents in overall control and management of OME.

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