Role of medical management in otitis media with effusion Journal of Current Medical Research and Practice

Mohammed A. Mohammed[a], Wafaa T. Elsherief[b], Mohammed M. Osman[a], Aida A. Abdelmaksoud[a]

[a]ENT Department, [b]Clinical Pathology Department, Faculty of Medicine, Assiut University, Assiut, Egypt

Correspondence to Mohammed M. Osman, MBBCh, MSc, MD, ENT Department, Assiut University Hospital, Assiut, Egypt
Tel: +20 100 526 7182; Postal Code: 71111; e-mail: mohammedosman72@yahoo.com

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Introduction
Otitis media with effusion (OME) is a common disease characterized by the retention of fluid and inflammatory byproducts in the middle ear without any clinical symptoms of acute infection.
Objective
The aim of the study was to evaluate the benefits of medical management and watchful waiting before surgical intervention in patients with OME.
Patients and methods
A total of 130 patients with OME, aged newborn to 35 years, were selected for this study. All patients received medical treatment in the form of amoxicillin for 10 days as first trial therapy; if no improvement was seen with amoxicillin, clavulanic acid was given for another 10 days as second trial therapy. Patients with persistent effusion after medical treatment were followed up for 3 months for spontaneous regression (watchful waiting, third trial therapy). Patients with persistent effusion after 3 months were subjected to surgical management according to the predisposing factor.
Results
A total of 86 (66.2%) patients showed complete recovery with medical management. Of them, 29.2% (38 patients) responded after the first trial of medical therapy, 26.1% responded after the second course, and 35.3% showed spontaneous recovery on watchful waiting.
Conclusion
An initial trial of medical therapy with watchful waiting for 3 months should be practiced before surgical intervention.

Keywords:
effusion, medical management, otitis media, tympanostomy tube, watchful waiting

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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. Twenty-five percent of these cases are accidentally discovered during routine checkup [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 after viral upper-respiratory-tract infections. It is characterized by an alteration in the mucociliary system in the 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 daycare, and bottle feeding. Certain diseases like cleft palate, immunodeficiency, ciliary dyskinesia, Down's syndrome, and cystic fibrosis are all associated with increased risk for OME. There are many theories pertaining to etiology, such as bacterial [4], immunological [5], allergic [6], viral [7], Eustachian tube dysfunction [8], nasopharyngeal obstruction [9], etc.

An initial trial of medical therapy with watchful waiting for 3 months should be practiced before surgical intervention. In light of the fact that above 60% of patients improve on medical management alone, compassionate and individualized care is suggested for every patient [10].

Patients and methods

Over a period of 12 months from January 2013 to January 2014, 130 patients with otitis with effusion, from newborns to 35-year-olds, were included in this study, selected from the ENT outpatient clinic of Assiut

University Hospital. Adult patients and guardians of younger ones included in the study were informed about the treatment plan and requested to give written consent before enrollment in the study. The study protocol was approved by the Ethical Committee of the Faculty of Medicine, Assiut University. The diagnosis of OME was made on the basis of any of the following clinical findings: dull tympanic membrane, loss of light reflex, loss of landmarks of the eardrum, blue drum, and/or alteration in the mobility of the tympanic membrane. These children were referred to the otolaryngologist by pediatricians and family practitioners for various symptoms. Every child underwent a complete ear, nose, and throat examination by the same ENT specialist. All children were subjected to detailed assessments by means of radiographs of soft tissue of the neck (lateral view) for adenoidal enlargement and an audiological assessment. All patients were subjected to automatic tympanometric screening (Immittancemeter, Automatic AZ26; Interacoustics A/S, Middelfart, Denmark). The cooperative patients above the age of 5 years underwent pure-tone audiometric assessments as well (Madson Orbiter 922, GN Otometrics A/S, Taastrup, Denmark).

After the initial evaluation, a course of oral antibiotics with a local decongestant and antihistamine with mucolytics was given for a period of 10 days. Being a safer broad-spectrum antibiotic, amoxicillin was the first choice in all patients (first trial).

Those who failed to show any response (persistence of clinical findings and follow-up tympanogram) were given amoxicillin and clavulanate along with the same supportive drugs for 10 days (the second trial). Patients with persistent effusion after medical treatment were followed up for 3 months for spontaneous regression (watchful waiting, third trial therapy).

Patients with persistent effusion after 3 months were subjected to surgical management in the form of myringotomy alone, myringotomy and ventilation tube insertion (grommet), myringotomy and adenoidectomy, or myringotomy and adenotonsillectomy according to the predisposing factor.

Results

A total of 80 (61.5%) children were under the age of 5 years, whereas 36 (27.7%) were between 6 and 10 years. The remaining 14 patients were older than 10 years. Fifty-one female patients (39.2%) and 79 male patients (60.8%) were included. All these children belonged to the middle and low socioeconomic group. Unilateral ear disease was diagnosed in 21 (16.1%) children, whereas the others had bilateral ear involvement. Recurrent upper respiratory tract infection (rhinosinusitis) was the most frequent predisposing factor, accounting for 55.4% of all cases; adenoids were diagnosed in 20% of patients and adenotonsillitis in 16.9% (Table 1). On radiographic examination, 48 (36.9%) patients showed large adenoids. On audiological assessment, all patients showed a type B curve except one who showed type C tympanometry. Only 50 (36%) children above the age of 5 years cooperated for pure-tone audiometry and were found to have an air–bone gap of 20–30 dB.

In this work, 38 children (29.2%) showed improvement after the first trial. After the second medical trial, 24 patients (26.1%) showed clinical improvement. The remaining 68 patients (73.9%) were advised watchful waiting up to 3 months from first presentation. Spontaneous recovery was noted in 24 (35.3%) patients after 3 months of watchful waiting (Table 2).

Patients who presented with OME with rhinosinusitis achieved a highly significant cure rate in comparison with other predisposing factors ($P < 0.001$). Also, the first trial achieved significant success in unilateral OME in comparison with bilateral OME ($P < 0.05$). The highest success rate in medical management among different age groups was seen in the preschool age group (2–5 years), which was statistically significant (Table 3). Surgical intervention was practiced in 44 (33.8%) patients who did not show any improvement on medical management (Table 4). Seven patients who had bilateral ear disease with type B curve on tympanometry did not show any fluid

Table 1 Predisposing factors for otitis media with effusion in the studied group

	n (%)
Adenoids	26 (20.0)
Adenoids and chronic tonsillitis	22 (16.9)
Bilateral nasal polypi	1 (0.8)
Eustachian tube dysfunction	1 (0.8)
Recurrent upper-respiratory-tract infection (rhinosinusitis)	72 (55.4)
Sinusitis	3 (2.3)
Tonsillitis	5 (3.8)
Total	130 (100.0)

Table 2 Results of different lines of treatment

Line	*n* (%)
First trial	
Succeeded	38 (29.2)
Failed (entered second trial)	92 (70.8)
Second trial	
Succeeded	24 (26.1)
Failed (entered third trial)	68 (73.9)
Third trial	
Succeeded	24 (35.3)
Failed (operated upon)	44 (64.7)

Table 3 Relation between medical therapy success and age, sex, laterality, and predisposing factors

	Medical therapy		Total	*P* value
	Failed	Succeed		
Age group (years)				
0-5	24	56	80	0.0007 (S)
>5	20	30	50	
Sex				
Male	42	37	79	0.01 (S)
Female	2	49	51	
Laterality				
Unilateral	0	21	21	0.0003 (S)
Bilateral	44	65	109	
Predisposing factor				
Rhinosinusitis, sinusitis	11	64	75	0.00001 (S)
Adenoids, adenotonsillitis, and tonsillitis	33	20	53	
Others	0	2	2	
Total	44	86	130	-

Table 4 Operations done

Operation	*n* (%)
Bilateral myringotomy, grommet tube, and adenoidectomy	17 (38.7)
Bilateral myringotomy, grommet tube, and adenotonsillectomy	16 (36.4)
Bilateral myringotomy and grommet	9 (20.5)
Bilateral myringotomy	1 (2.2)
Bilateral myringotomy and tonsillectomy	1 (2.2)

behind the ear drum on myringotomy, most likely because of self-resolution.

Discussion

OME is a very common problem in children. It denotes the presence of chronic effusion in the middle-ear cleft. OME implies a silent subacute stage of otitis media without the acute symptoms of fever or severe otalgia. In our study we found that rhinosinusitis, adenoid hypertrophy, and chronic tonsillitis were the most common predisposing factors (55.4, 36.9, and 20.7%, respectively). Khan *et al*. [11] also reported that rhinosinusitis, adenoid hypertrophy, and chronic tonsillitis were the most common predisposing factors (36.8, 34.5, and 13.8%, respectively). Joshua [12] reported that upper-respiratory-tract infection had a pronounced association with bilateral status of effusion at baseline. When inadequately treated, otitis may lead to major functional limitations like permanent hearing loss and impairment in the development of speech and language [13].

Most of our patients were of middle and low socioeconomic status, as seen in many recent studies. In India, Siddartha *et al*. [13] reported that only 4% of OME cases belong to the upper class and 96% belong to middle and lower classes, as reported by Kuppuswamy [14] as well. In our study, boys were more affected with OME than girls (60.8 vs. 39.2%). This is in agreement with Khan and colleagues [11,15,16], who reported that boys are more likely to have OME than girls.

Medical management and watchful waiting achieved cure in 66.2% of our patients. In our study the first trial achieved complete recovery in 29.2% of OME case, whereas the second trial achieved complete recovery in 26.1% of the remaining cases and watchful waiting achieved complete recovery in 35.4% of OME cases. This is comparable to a study conducted by Gulati *et al*. [10] who reported complete recovery in 58.5% of their patients in response to medical therapy and watchful waiting. In their study the first trial achieved complete recovery in 33.5% of OME case, whereas the second trial achieved complete recovery in 25% of the remaining cases and watchful waiting achieved complete recovery in 16.7% of OME cases.

In our study we found that younger age, unilaterality, and rhinosinusitis were significantly related to good outcome on medical treatment and watchful waiting. That could be attributed to the fact that most our patients were less than 5 years and the most common predisposing factor in them was rhinosinusitis, which explains their good response to medical therapy. In the meta-analysis by Joshua [12] of three studies the authors concluded that unilateral OME has more favorable response than bilateral OME to medical therapy.

In our study, myringotomy and grommet tube application were performed in 95.6% of the operated patients and adenoidectomy in 75.1%. In a study in Pakistan, myringotomy and grommet tube application were performed in 73.6% of patients and adenoidectomy in 52.5%. The difference between the two results is due to the higher frequency of hypertrophied adenoids among our patients [11].

Conclusion

An initial trial of medical therapy and watchful waiting for 3 months should be practiced before surgical intervention for OME.

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Conflicts of interest

There are no conflicts of interest.

References

1 Rosenfeld RM. Comprehensive management of otitis media with effusion. Otolaryngol Clin North Am 1994; 27:443–455.

2 Roland PS, Finitzo T, Friel-Patti S, Brown KC, Stephens KT, Brown O, Coleman JM. Otitis media. Incidence, duration, and hearing status. Arch Otolaryngol Head Neck Surg 1989; 115:1049–1053.

3 Dvokski I, Sprom N. Secretory otitis media in childhood: epidemiologic and etiopathogenic aspects, diagnosis and therapy. Lijec Vjesu (Crotia) 1991; 113:430–434.

4 Van Guwenberge PB, Vander Munsbrugge AM, Ingels KI. The microbiology of acute and chronic sinusitis and otitis media: a review. Acta Otorhino-laryngeal 1993; 47:27–32.

5 Palva T, Lehtinen H, Vistanen H. Immune complexes in the middle ear fluid and adenoidal tissue in chronic secretory otitis media. Acta Otolaryngologica 1983;95(5-6):539-43.

6 Clemis JD. Identification of allergic factors in middle ear effusions. Ann Otol Rhinol Laryngol 1976; 85(Suppl 25 Pt 2): 234–237.

7 Okamoto Y, Kudo K, Ishikawa K, Ito E, Togawa K, Saito I, *et al.* Presence of respiratory syncytial virus genomic sequences in middle ear fluid and its relationship to expression of cytokines and cell adhesion molecules. J Infect Dis 1993; 168:1277–1281.

8 Sakakihara J, Honjo I, Fujita A, Kurata K, Takahashi H. Eustachian tube compliance in sniff-induced otitis media with effusion. A preliminary study. Acta Otolaryngol 1993; 113:187–190.

9 Forsgren J, Samuelson A, Lindberg A, Rynnel–Dagoo B. Quantitative bacterial culture from adenoidal lymphatic tissue with special reference to Haemophillus influenza age associated changes. Acta Otolaryngal 1993; 113:668–672.

10 Gulati B, GR Rani, SY Mansour, AM Jafar. Medical management of otitis media with effusion. Kuwait Med J 2001; 33:317–319.

11 Khan F, Asif M, Farooqi GH, Shah SA, Sajid T, Ghani R. Management outcome of secretory otitis media. J Ayub Med Coll Abbottabad 2006; 18:55–58.

12 Joshua T. Prognosis in children with otitis media with effusion 1983;95(5-6). Available at: http://d-scholarship.pitt.edu/10153. [Last accessed on 2015 Oct 23].

13 Siddartha, Bhat V, Bhandary SK, Shenoy V, Rashmi. Otitis media with effusion in relation to socio economic status: a community based study. Indian J Otolaryngol Head Neck Surg 2012;64(1):56-8.

14 Kuppuswamy P. Park's Textbook of Preventive and Social Medicine. New Delhi: Banarasidas Publication; 2007.

15 Erdivanli OC, Coskun ZO, Kazikdas KC, Demirci M. Prevalence of otitis media with effusion among primary school children in Eastern Black Sea, in Turkey and the effect of smoking in the development of otitis media with effusion. Indian J Otolaryngol Head Neck Surg 2012; 64:17–21.

16 Kubba H, Pearson JP, Birchall JP. The aetiology of otitis media with effusion: a review. Clin Otolaryngol Allied Sci 2000; 25:181–194.