

**Original article:**

## Study of clinical features of Otitis Media with Effusion

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### Abstract:

**Introduction:** Otitis media with effusion is the commonest cause of hearing difficulty and one of the most frequent reasons for elective admission to hospital for surgery during childhood. A variety of synonyms describes the condition.

**Material and methods:** This study was carried out in the Department of ENT, kakatiya medical college, Warangal. It was Prospective study was conducted during two years period. They are the patients attending the E.N.T. Department of Mahatma Gandhi Memorial Hospital and also patients referred from other departments in the same hospital. A total of 50 cases were studied.

**Results :** Most cases i.e., 35 (70%) presented with fullness of ear, followed by 31cases (62%) with hard of hearing, 24 cases (48.00%) with bubbling sound, 13 cases (26.00%) with tinnitus and 3 c . Symptoms of Adenoid hypertrophy at presentation.

**Conclusion:** Serious complications of OME like hearing loss, indirect effects on learning, speech, behaviour and chloesteatoma are prevented by early diagnosis and intervention.

### Introduction:

Otitis media with effusion is the commonest cause of hearing difficulty and one of the most frequent reasons for elective admission to hospital for surgery during childhood. A variety of synonyms describes the condition. It has been termed catarrhal, exudative, seromucinous, serous, otitis media with effusion and non-suppurative otitis media. Following sequential discussion at International Symposia the term middle ear effusion and otitis media with effusion are currently acceptable.<sup>1</sup>

Otitis Media with Effusion (OME) is defined as the presence of effusion behind an intact eardrum without symptoms of acute inflammation. It is a common problem of children between 1 to 5 years old. Most of the cases of OME are asymptomatic.<sup>2, 3,4</sup>

### Material and methods:

This study was carried out in the Department of ENT, kakatiya medical college, Warangal. It was Prospective study was conducted during two years period. They are the patients attending the E.N.T. Department of

Mahatma Gandhi Memorial Hospital and also patients referred from other departments in the same hospital. A total of 50 cases were studied.

**InclusionCriteria:**

The patients who were diagnosed as otitis media with effusion and less than or equal to 12 years of age, included in the study.

**Exclusion Criteria:**

The patients who were diagnosed as other than otitis media with effusion and more than 12 years of age were excluded from the study.

**Methods of Data Collection:**

The Proforma was designed based on the objectives of the study. It was pretested and used after modification (enclosed in annexure). As per the enclosed Proforma, detailed history was taken followed by thorough ENT and systemic examination, and clinical diagnosis was made in support with the relevant investigations. Once the diagnosis was confirmed as OME the fluid aspiration was done and sent for culture.

The data thus obtained was analysed with the aid of calculator and presented in the form of tables, figures, graphs and diagrams wherever necessary. The findings are discussed in the light of findings in other similar studies conducted elsewhere based on the objectives of the study in the foregoing chapters.

**Results:**

**Table 1. Symptom Wise Distribution of Cases**

Symptoms	No. of Patients	Percentage (%)
Fullness of ear	35	70
Hard of hearing	31	62
Tinnitus	13	26
Bubbling sound	24	48
Earache	3	6
Ear discharge	1	2

Most cases i.e., 35 (70%) presented with fullness of ear, followed by 31cases (62%) with hard of hearing, 24 cases (48.00%) with bubbling sound, 13 cases (26.00%) with tinnitus and 3 c Table 7. Symptoms of Adenoid hypertrophy at presentation\*

**Table 2) Symptom Wise Distribution of Cases**

Symptoms	Suggestive of	No of Pt.'s	Percentage (%)
Adenoid hypertrophy			
Mouth breathing		35	70
Snoring		35	70
Speech hypo nasality		30	60

\* Not mutually exclusive.

The symptom of adenoid hypertrophy was observed in 35(70%) patients. Fifteen patients did not have any symptom suggestive of adenoid hypertrophy at presentation.

ases (6.00%) with earache

**Table 3. Categorical representation of air conduction (AC) threshold pure tone audiometry at 0.5, 1, 2, 4 KHz**

	Pre-OP	Post-OP 2 Months	Post-OP 6 Months	Pre-OP	Post-OP 2 Months	Post-OP 6 Months
>20	3 (6)	43 (86)	44 (88)	3 (6)	43 (86)	44 (88)
20	29 (58)	7 (14)	6 (12)	30 (60)	7 (14)	6 (12)
30	18 (36)	–	–	17 (34)	–	–

**Table 4: Effect of treatment on air conduction (AC) threshold pure tone mean audiometry at 0.5, 1, 2, 4 KHz**

	Pre-OP	Post-op 2 <sup>nd</sup> month	Post-op 6 <sup>th</sup> month
Right ear, ACdBHL (Mean ± SD)	26.78 ± 6.62	16.50 ± 4.16	16.08 ± 3.78
Left ear, ACdBHL (Mean ± SD)	26.98 ± 5.94	16.56 ± 4.16	16.10 ± 3.69

On categorizing air conduction thresholds into 3 groups, the effect of treatment on hearing impairment was analysed. Forty-four out of 47 (93%) patients with significant hearing loss ( $\geq 20$ dBHL) in both ears, returned to normal hearing thresholds ( $< 20$ dBHL) following treatment.

**Table 5 : Culture Pattern of ME effusion**

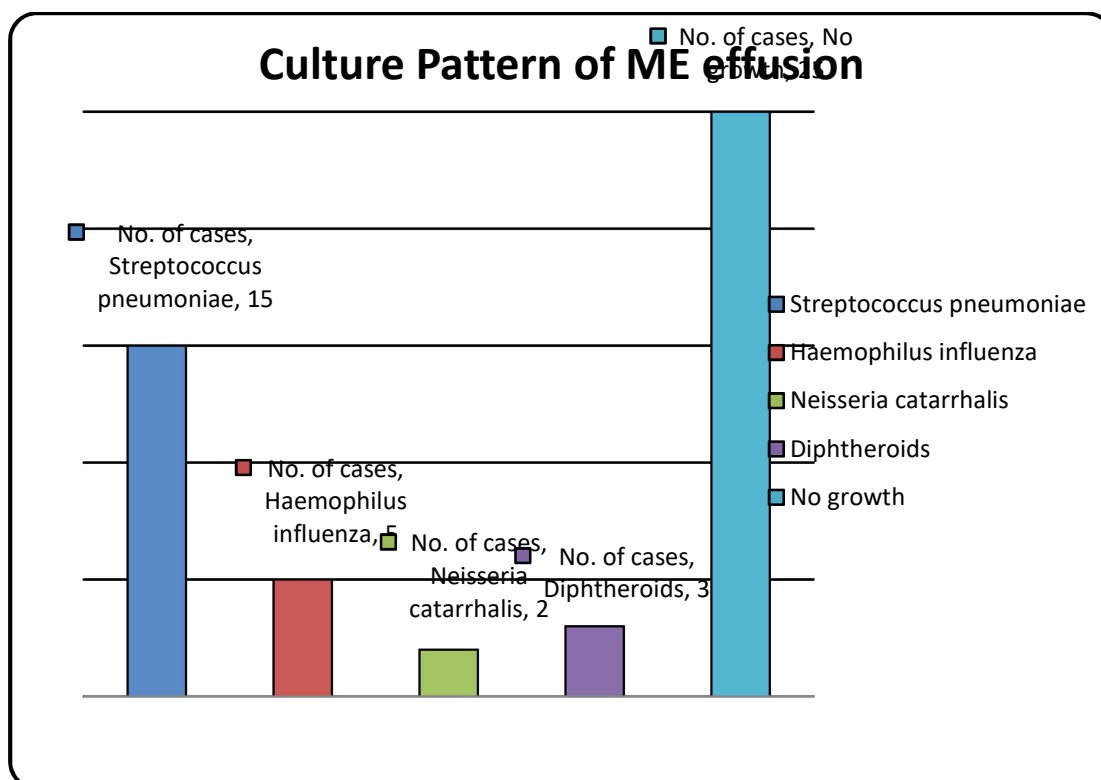
Organism	No. of cases	Percentage
Streptococcus pneumoniae	15	30
Haemophilus influenza	5	10
Neisseria catarrhalis	2	4
Diphtheroids	3	6
No growth	25	50

Culture of ME effusion was done in all 50 (100%) cases. It was observed that Streptococcus pneumoniae was the predominant organism isolated i.e., in 15cases (30%), followed by this in 5 cases (10%) Haemophilus influenza was isolated. N.Catarrhalis and Diphtheroids were isolated in 2 (4.00%) and 3(6.00%) cases respectively. No growth was seen in 25 cases (50%).

**Table 6 : Surgical Modalities**

Modality of Treatment	No. of cases	Percentage (%)
Adenoidectomy with Grommet insertion	25	50
Adenotonsillectomy with Grommet insertion	10	20
Myringotomy and Grommet insertion	7	14

All the cases i.e., 50 (100%) were put on medical line of treatment and advised to do Valsalva manoeuvre daily. On regular follow-up of all the patients, 8 cases (16%) responded well with medical line and did not require any surgical intervention. Of the refractory cases i.e., 42 (84%), 10 cases (20%) had undergone adenotonsillectomy with grommet insertion, another 25 cases (50%) had adenoidectomy with grommet insertion and remaining 7 cases (14%) underwent myringotomy with grommet insertion depending on the presence or absence of tonsils and adenoids.



### **Discussion:**

Most of the cases i.e., 35 (70%) presented with fullness of ear followed by 31 cases (62%) with HOH, 24 cases (48%) with bubbling sound, 13 (26%) cases with tinnitus, 3 cases (6%) with earache and 1 case (2%) with ear discharge. Study by Howie VM<sup>4</sup> (1975), and Kaplan et al<sup>5</sup> (1973) have also shown the predominance of fullness in ear.

In our study, on otoscopic examination most of the cases (70% in left and 68% in right ear) have shown dull and retracted. Other cases have shown thin and retracted (8% in left and right ear), fluid with air bubble in ME cavity (8% in left and 10% in right ear), normal TM (8% in left and 6% in right ear), bulged TM (6% in left and 8% in right ear). On pure tone audiometry, there was conductive hearing loss of 15-40 db. Study by Schilder, Zielhais and Venden Brook<sup>6</sup> (1993) have shown mean 20 dB hearing loss. In Glasgow studies by Dempster & Mackenzie<sup>7</sup> (1991) have shown 26 dB hearing loss. In our study 44 (88%) patients had decreased mobility in left ear and 45 (90%) had decreased mobility in right ear. 33 patients (66%) had conductive hearing loss in left ear and 35 (70%) had conductive hearing loss in right ear. However in 14 patients below 7 years TFT was inconclusive as these children were not cooperative.

### **Tympanometry:**

Type B pattern was observed in 47 (94%) patients in left ear and 43 (96%) in right ear.

Type C pattern was observed in 3 (6%) patients in right ear.

### **Pure tone audiometry:**

On PTA, there was conductive hearing loss of 15-40 dB

It is observed in our study that in 15 cases (30%), the organism isolated was *Streptococcus pneumoniae*. Followed by this 5 cases (10%) have shown *H. Influenzae*. In 2 case (4%) and 3 cases (6%) *N. catarrhalis* and *Diphtheroids* were isolated. So, positive bacterial cultures were seen in 25 cases (50%), and the remaining 25 cases (50%) did not show any growth.

Klein<sup>3</sup> (1980) showed positive bacterial cultures in up to 50% of ME effusions. Bacteria found are similar to those cultured in cases of ASOM. Stenfors & Raisanen<sup>31</sup> (1992) have shown positive ME cultures for *H. influenzae*, *Streptococcus pneumonia* and *Moraxella catarrhalis* in 30% of cases and in 19% there were dormant organisms of *H influenza* and *Streptococcus pneumoniae*.

In our study, all the cases i.e., 50 (100%) were started with medical line of treatment. They were prescribed with amoxicillin and clavulanic acid, Ambroxol and phenylephrine. On follow up, only 8 cases (16%) responded well and the remaining 42 cases (84%) did not show favourable results. This was supported by study done by Chan et al<sup>125</sup> (1988).

Of the refractory cases i.e., 42 (84%), 10 cases (20%) required adenotonsillectomy with grommet insertion and another 25 cases (50%) required adenoidectomy and grommet insertion and remaining 7 cases (14%) required myringotomy and grommet insertion depending on the presence or absence of hypertrophied adenoids or tonsils.

All the patients were regularly followed up post-operatively. During follow-up the otoscopic examination and audiometry results showed that there were significant changes in the appearance of

tympanic membrane and reduction in air-bone gap. These results were more obvious in 35 cases (70%) that had undergone adenotonsillectomy with grommet insertion (10 cases i.e., 20%) and adenoidectomy with grommet insertion (25 cases i.e., 50%) without much difference. Of the cases studied for results of management, 4 patients (8%) had expulsion of grommet after 2 months. In 5 cases (10%), there was mucopurulent discharge followed by grommet insertion. These patients were treated with proper antibiotics after removal of grommet. In a study by Bingham et al<sup>126</sup>(1988), removal of tube in patients with mucopurulent otorrhoea resolved the discharge in 79% of ears within a month.

All the cases (100%) were put on medical treatment and regularly followed up. 16% of cases responded well with medical treatment. Remaining (84%) were the refractory cases, of which 20% required adenotonsillectomy with grommet insertion, another 50% required adenoidectomy with grommet insertion and 14% required myringotomy and grommet insertion.

On post-operative follow-up, 70% cases showed significant improvement in signs and symptoms. Good results were seen mostly in patients who had undergone adenotonsillectomy or adenoidectomy with grommet insertion. In 8% cases, there was expulsion of grommet in 2 months. In 10% cases, there was mucopurulent discharge followed by grommet insertion.

#### **Conclusion:**

It is preventable to some extent by early diagnosis and intervention by detecting Otitis Media with Effusion during health check-up – Well baby clinics, School health screening. Serious complications of OME like hearing loss, indirect effects on learning, speech, behaviour and chloesteatoma are prevented by early diagnosis and intervention.

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For any images presented appropriate consent has been obtained from the subjects: NA  
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