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A COMPARATIVE STUDY OF MEDICAL AND SURGICAL TREATMENT OF OTITIS MEDIA WITH EFFUSION

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ABSTRACT **Background:** Secretory otitis media or otitis media with effusion (OME) is the most common cause of conductive hearing loss in children. Though self- limiting recurrent disease, but OME must be detected early and managed properly to prevent hearing and speech impairment in children. **Objective:** To compare results of medical and surgical treatments of OME in terms of symptomatic improvement, hearing improvement and recurrence of middle ear effusion. **Method:** A prospective randomised study of 50 patients of various age groups diagnosed with OME was conducted for one year in Tripura medical college and randomized into two groups of 25 patients each. One group received conservative treatment with anti-histaminics and decongestants and other underwent surgical treatment with myringotomy with or without grommet. The patients were followed up regularly for upto 6 months for symptomatic improvement and hearing improvement and results were compared.
Results: Compared to medical treatment which resulted in a successful outcome in 40% of patients, cases who underwent surgical treatment had successful outcome in 70% of cases. **Conclusion:** Surgical management in the form of myringotomy with or without grommet insertion has better long-term outcome in terms of hearing improvement and disease recurrence.

KEYWORDS : Secretory otitis media, hearing loss, myringotomy with grommet.

INTRODUCTION

Otitis media with effusion (OME) is the presence of inflammation with accumulation of fluid in middle ear with intact tympanic membrane, without signs of acute inflammation. It is defined as the persistence of serous or mucoid middle ear effusion for 12 weeks or more.[1] It is also called as secretory otitis media, catarrhal otitis media, exudative otitis media, seromucinous otitis media, non-suppurative otitis media. Any condition, which interferes with the proper functioning of the mucociliary system of the upper respiratory tract, may predispose to development of middle ear effusion.

OME is the most common cause of hearing impairment in children.[2,3] It occurs commonly in children, especially between the age of 1 and 3 years with the prevalence of 10% - 30% and a cumulative incidence of 80% at the age of 4 years but always shows incidence in various age groups. It results in delayed speech development, learning difficulty, and poor performance in school.[4] Fifty percent ears with effusion resolve spontaneously within 3 months, and only 5% persist for more than 12 months.[5] OME occurs in adults after severe upper respiratory infection such as sinusitis, severe allergies, or rapid change in air pressure after an aeroplane or a scuba dive. In adults, it can lead on to atelectatic otitis media which can sometimes lead on to cholesteatoma formation. Treatment includes medical management in the form of antibiotics, mucolytics, local decongestants, intranasal steroid which is cost-effective and helps in the control of acute episodes of serous otitis media but associated with frequent relapse and recurrence [6]. Surgical intervention in the form of myringotomy with or without grommet insertion has better outcome in terms of hearing improvement and recurrence but assosciated with persistent otorrhoea, granulation tissue formation and dreaded complications like persistent tympanic membrane perforation [6]. This study is aimed to compare results of medical and surgical treatments in terms of symptomatic improvement, hearing improvement and reccurence of middle ear effusion.

MATERIALS AND METHOD

- **Study Type -** Prospective Study.
- **Study Duration-** 1 year (From 1st February 2021 to 31st January 2022).
- **Study Area-** Department of ENT, TMC & Dr. BRAM Teaching Hospital, Hapania, Agartala, West Tripura, PIN-799014.
- **Study Population-** Patients of various age groups attending IPD & OPD, Department of ENT, who met the inclusion criteria and give their written consent.

Inclusion Criteria-

- Patients with complaints of decreased hearing/ discomfort or blocking sensation of the ear for more than 3 months.
- Otoscopic evidence of secretory otitis media.
- An impedence audiometry with type B or C curve.

Exclusion Criteria-

- Patients with acute ear pain, ear discharge.
- Patients deaf since childhood.
- Patients with family history of decreased hearing.
- Patients with cleft palate, benign and malignant tumors of nasopharynx.

Sample Size- Patients have been randomly selected in this prospective study conducted from february 2021 to january 2022. 100 patients at an average in a single year with diagnosed OME have been found to have attended ENT OPD of Tripura Medical College. So, 50 patients diagnosed with OME as per inclusion criteria have been included in the study.

METHOD

50 patients of various age groups attending OPD and IPD of ENT, TMC & Dr. BRAM Teaching Hospital are numbered separately and divided into 2 groups of 25 patients each. A proforma for history, examination, investigations and treatment options was used to collect data. All patients were examined with otoscope and confirmed with examination under microscope/ endoscope. All patients were subjected to PTA and tympanometry. X-ray PNS (occipito-mental view) and X-ray nasopharynx lateral view were done in suspected cases of chronic sinusitis and adenoids in case of children. The predisposing factors for otitis media with effusion if present were noted. Otoscopic evidence of normal or dull, retracted, lustreless tympanic membrane with air bubble or fluid level and distorted cone of light was recorded and audiometry finding of hearing loss more than 20db and tympanometry with type B or C curve were included in the study.

Odd numbered patients included under Group A (25 no's) were given medical treatment for 6 weeks which included –

- Antibiotics, anti-inflammatory drugs, antihistaminics, nasal decongestants, mucolytics, intranasal steroids.
- They were instructed to perform valsalva manoeuvre 3-5 times a day.

Even numbered patients under Group B (25 no's) subjected to surgical management in the form of –

- Myringotomy with aspiration.
- Myringotomy with grommet insertion.
- Improvement in medical and surgical treatment were considered if
- Patients have symptomatic relief.
- Otoscopic evidence of improvement.
- Pure tone audiometry showing good improvement in hearing (air- bone gap < 10db) and confirmed by tympanometry.

All the patients were followed-up regularly after 6 weeks of

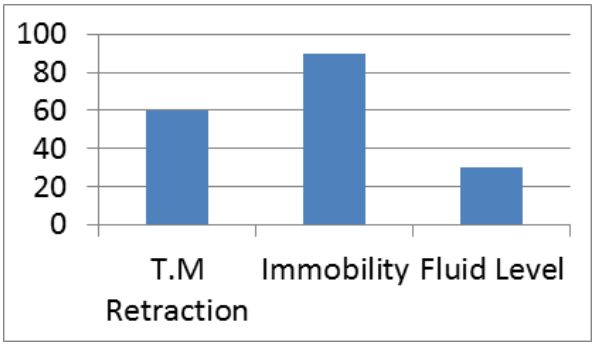
medical / surgical management with PTA, tympanometry or otoendoscopy for upto 6 months.

RESULTS

The demographic profile in this study shows the most common age-group affected was between 2-15 years. Of the 50 patients studied, 54% (27 patients) were male and 46% (23 patients) were female. The most common symptoms and signs are tabulated in the following table and diagram:

Table 1: The symptom profile of patients in the study

SYMPTOMS	NUMBER OF PATIENTS
Difficulty in hearing	36
Ear fullness	27
Otalgia	22
Nasal symptoms	13



Bar Diagram 1 : Tympanic membrane findings in the study.

Pure tone audiometry showed conductive hearing loss in the range of 20-40 db in majority of the patients (80%) and tympanometry showed type B curve as the common finding in 80% patients.

Table 2: The degree of hearing loss in the study

HEARING LOSS (db)	NUMBER OF PATIENTS	
	RIGHT	LEFT
20-30	16	18
31-40	24	22
41-50	8	5
51-60	2	0
61-70	0	0

Our patients were randomized into 2 groups and results were analyzed in terms of symptomatic relief, pure tone audiogram results and pneumatic otoscopy. Out of 25 patients, who were taken up for medical treatment, 52% of patients showed a significant reduction in the air-bone gap with gap less than 10db as compared to pre-treatment values, 40% of the patients had their tympanic membrane returned to normal appearance and only 20% of the patients had symptomatic relief.

Considering the patients with 2 of the 3 factors (symptomatic relief, tympanic membrane returned to normal appearance, air bone gap less than 10 db) as successful outcome of medical treatment, only 40% (10 patients) had successful outcome.

Table 3: The treatment results in the medical group.

RESULTS OF MEDICAL TREATMENT	NUMBER OF PATIENTS
Symptomatic Relief	5
TM Normal	10
Air Bone Gap<10db	13

Patients in surgical treatment group (25 nos) along with patients who were declared as failure of medical treatment (15 nos), a total of 40 patients were subjected to surgical management. Out of the 40 patients who underwent surgical treatment, 70% showed a significant improvement when the above criteria for successful outcome was taken.

Table 4: The treatment results in surgical group

RESULTS OF SURGICAL TREATMENT	NUMBER OF PATIENTS
Symptomatic Relief	16
TM Normal	23
Air Bone gap<10 db	26

DISCUSSION

In our study, the predominant age-group affected was found to be between 2-15 years. There was no significant difference in the incidence among males (54%) and females (46%). Eustachian tube dysfunction was found to be the most common predisposing factor (70%), followed by adenoid hypertrophy and allergy.

Zielhius et al[7] reviewed about 23 studies which used tympanometry as one of the diagnostic tool to give age specific prevalence rates and found that the prevalence is bimodal with first peak at 2 years.

Medical treatment showed a successful outcome in 40% of patients. The remaining 60% patients who did not show improvement was subjected to surgical treatment. Out of the 40 patients who underwent surgical treatment, 70% had successful outcome.

Gates[8] and others found that in 45% of cases treated with antibiotics (erythromycin ehylsuccinate and sulfisoxale), effusion cleared by one month and 60% cleared in two months.

Mandle et al[9] in their study found that with amoxycillin, the clearance of effusion was significantly greater in the control groups.

Blue stone et al[10] in their study found that the clearance of effusion did not differ between the groups who received decongestants, antihistamincs and placebo.

Paradise et al[11] have demonstrated the effectiveness of adenoidectomy in the management of secretory otitis media.

CONCLUSION

Secretory otitis media is a treatable cause of conductive hearing loss in children. In children, eustachian tube dysfunction was secondary to functional or mechanical obstruction and is the most common precipitating factor for secretory otitis media. Medical management is economical and helps in the control of acute episodes of secretory otitis media but associated with frequent relapse and recurrence. Surgical management in the form of myringotomy with grommet insertion has better long term outcome in terms of hearing improvement and disease recurrence.

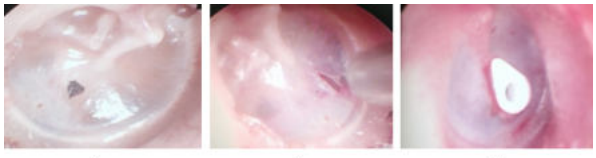


Figure 1:-
(a) Otoendoscopic view of the right tympanic membrane.
(b) Circumferential incision.
(c) Grommet in situ.

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