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A Clinical Prospective Study of Secretory Otits Media – And its Management

A. Mohammed Siyad[1], R. Venkataramanan[2]
[1, 2] Department of ENT, Sri Lakshmi Narayana Institute of Medical Sciences Affiliated to Bharath Institute of Higher Education and Research, Chennai, Tamil Nadu, India.
jothikumar.bharathuniv@gmail.com

ABSTRACT

Secretory otitis media is the most common cause of conductive hearing loss in children. Secretory otitis media is generally self-limiting, but occurs during a period when poor hearing will impede speech and language development. This is a prospective study of the epidemiological profile, predisposing factors, clinical profile of secretory otitis media. This study also compares the conservative treatment with early surgical Treatment in Patient with secretory otitis media. Eustachian tube dysfunction is one of the commonly associated problems in OME. Enlarged and infected adenoids the leading cause of Eustachian tube dysfunction in children and young adults. Adenoidectomy in children having hypertrophied adenoidswith SOM, not only relieves. Eustachian tube obstruction but also removes the source of infection. This leads to clearance of middle ear effusion and improvement in hearing postoperatively. Adenoidectomy is being increasingly used for the treatment of SOM because recent studies have confirmed its effectiveness. The historical rationale for their moval of adenoids in children with SOM has been enlargement causing nasal obstruction and mouth breathing.

Keywords:
Secretory oitis media, Eustachian tube, Hearing, Adenoidectomy

1.Introduction

Secretory otitis media is the most common cause of hearing impairment in children. It is defined as the persistence of mucoid or serous middle ear effusion for 12 weeks or more.[1] It can also be called as exudative otitis media, seromucinous otitis media, non-suppurative otitis media, otitis media with effusion, catarrhal otitis media. Theterm secretory is the most appropriate as it reflects the most particular aspect of pathological process. The term otitis media with effusion helps in differentiation of the types of effusion and facilitates distinction into acute, chronic, serous or mucinoustype.

In many children, secretory otitis media is preceded by an acute episode of otitis media. This is mostly true especially in younger children because of the increased incidence of upper respiratory tract infection [2]. Acute otitis media is usually triggered by viral respiratory tract infection which causes damage to the epithelium of Eustachian tube, resulting in middle ear fluid retention. So secretory otitis media will be present temporarily in many children after an episode of acute otitismedias.

Secretory otitis media is generally self-limiting condition. The effects are usually short term, but in children in whom there is recurrent episode throughout childhood, some effects on cognition and behavior are detectable up to the age of 10 years and beyond.[2] In adults sometimes it can lead on to atelectatic otitis media which can cause cholesteatoma formation[3].

2. Materials And Methods

This study was done in the Department of ENT, Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry

It consists of 50 patients and their age ranges from 4years to 50 years.

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Patients with the following Inclusion criteria and Exclusion Criteria

A detailed history was taken for all patients. Past surgical history was also noted. All patients were examined with a pneumatic otoscope and the findings were recorded in 3 different formatsas

1. Normal tympanic membrane
2. A thin semitransparent tympanic membrane with air bubble or fluid level.
3. A dull or yellowish/opaque, retracted/bulging lustreless tympanic membrane with distorted or absent cone cone of light.

Other clinical examination were also performed like nasal, oral cavity examination, tuning fork tests were also performed. Patients with chronic sinusitis, allergy, chronic adenotonsilitis were segregated.

All patients were subjected to pure tone audiometry testing and graphical recording of their hearing threshold were recorded and the pure tone average in both ears were made. Tympanometry was done in all patients.

Both tympanometry and acoustic reflex testing were done. Radiological investigations in the form of PNS X-ray (occipito mental view) done in suspected cases of chronic sinusitis and assessment were made regarding pharyngeal end of Eustachian tube orifice and adenoids by diagnostic nasal endoscopy.

Examination under microscope was done for confirming the otoscopic findings. The predisposing factors for otitis media with effusion if present were recorded.

- ✓ One group of patients (25 Nos) were given medical treatment for 6 weeks
- ✓ Other group of patients (25 Nos) were subjected to Surgical management

Air bone gap <10dB in postoperative audiogram done after 3 weeks.

3. Results And Discussion

This study is mainly about the prospective analysis, incidence, predisposing factors, clinical features and the treatment outcome of medical, surgical management conducted in the Sri Lakshmi Narayana Institute of Medical Science, Pondicherry

The statistical profile shows the most common age group affected was between 5 to 15 years. Of the 50 patients studied 56% (27 patients) were male and 44% (23 patients) were female. In the different age groups there was no significantly noticeable difference between male and femalepatients.

The most common symptom associated was hard of hearing which was seen in 55% of patients followed by ear fullness (20%), otalgia (15%), nasal symptoms (10%). On otoscopic examination, most common sign was tympanic membrane impaired mobility which accounted for 60% of patients, preceded by retracted tympanic membrane (25%),then fluidlevel(15%).

Eustachian tube function was checked by diagnostic nasal endoscopy and pneumatic otoscopy. Adenoid hypertrophy being the common predisposing factor found in 80% of patient, followed by allergy (12%), GERD(8%).

Though cleft palate is a high risk factor for secretary otitis media, we did not encounter any patient with cleftpalate.

Most of the patients had hearing loss in the range of 20-40 db (70%). About 75% of patients had B curve, 25% patients had _C‘ curve.

Our patients were randomized into mainly 2 arms. medical treatment arm and surgical treatment arm, and the end results were analyzed in terms of pure tone audiogram result , symptomatic relief, and pneumatic otoscopy. In 25 patients who were taken up for medical

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treatment 60% of patients had shown significant reduction in the air bone gap with air bone gap less than 10 db as before to the pretreatment values. 50% of the patients had their tympanic membrane returned to normal appearance. Only 20% of the patients had symptomaticrelief.
Considering the patients with 2 of the 3 factors (tympanic membrane returned to normal appearance, air bone gap less than 10db ,symptomatic relief) as successful outcome of medical treatment, only 38% (10 patients) had successful outcome. Patients in surgical treatment arm (25 No‘s) along with patients (15 No‘s) who were considered as failure of medical management, a total of 40 patients were subjected to surgicalmanagement.

Out of the 40 Patients who underwent surgical treatment 75% showed a significant improvement when the criteria for successful outcome was taken. Out Of the 15 patients who were taken up for surgical treatment due to failure of medical treatment, 5 patients still did not show any significant improvement even after surgical treatment.

FIGURE 1: Age Distribution

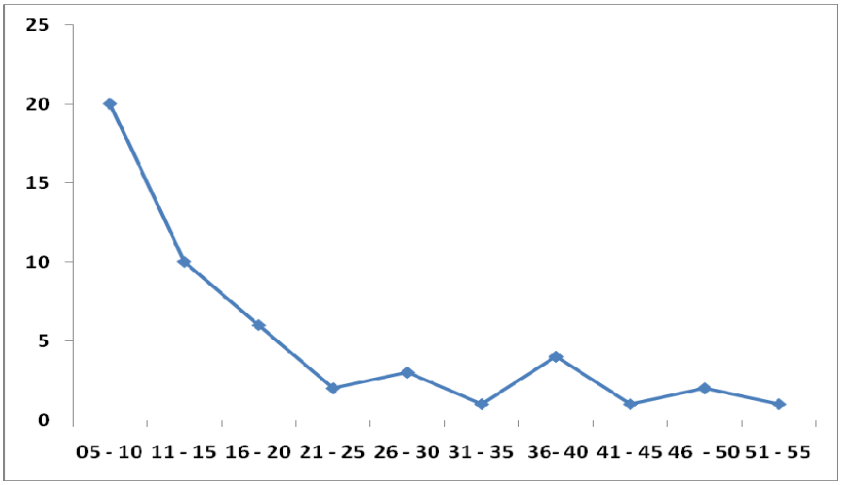
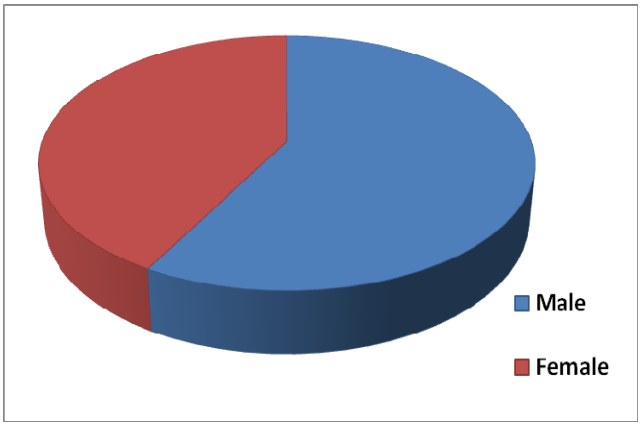


FIGURE 2 SexDistribution



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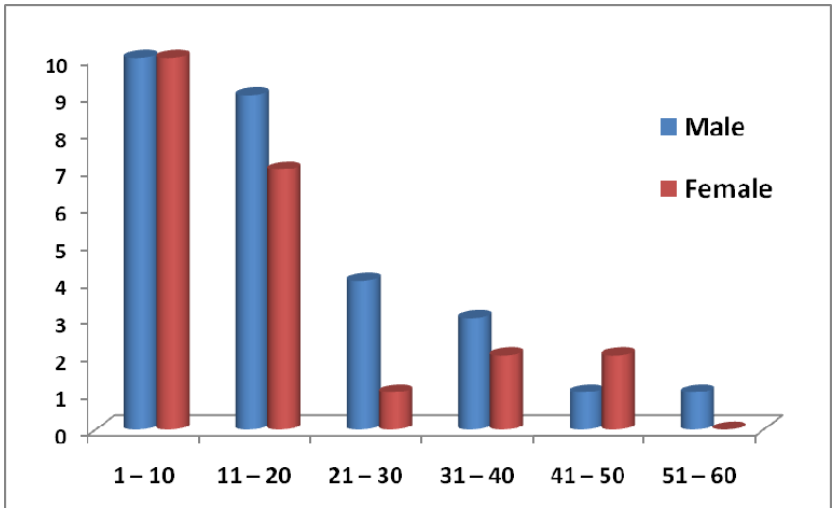

Figure 3 Age Group /Sex Distribution

Figure 4 Symptomology

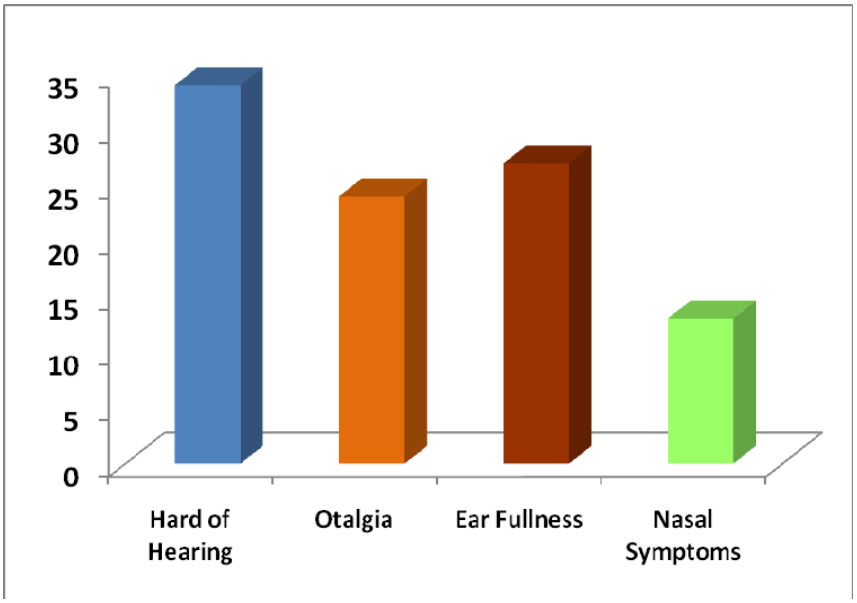

Figure 5 Signs

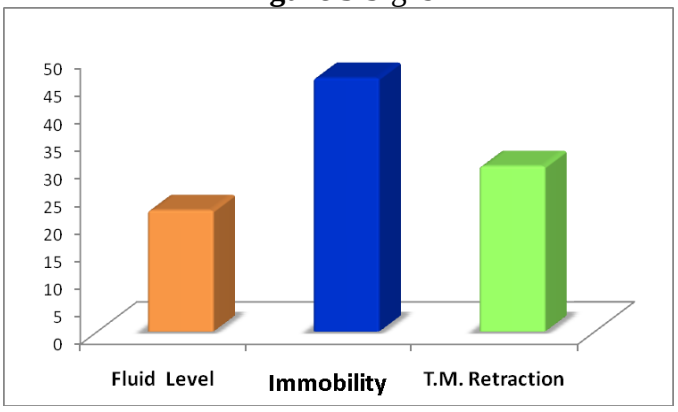

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Figure 6 Pre Disposing Factors

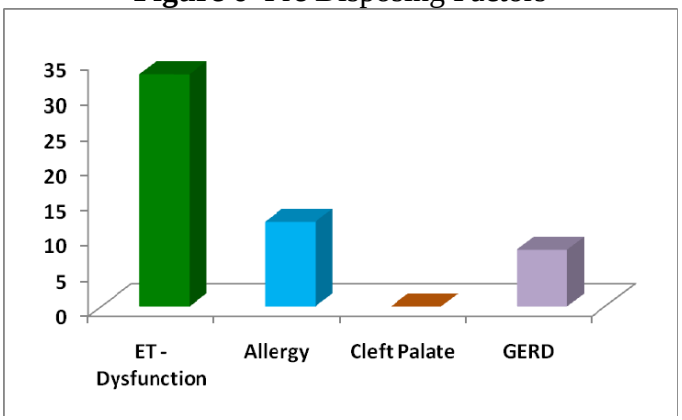

Figure 7 Medical management-Results

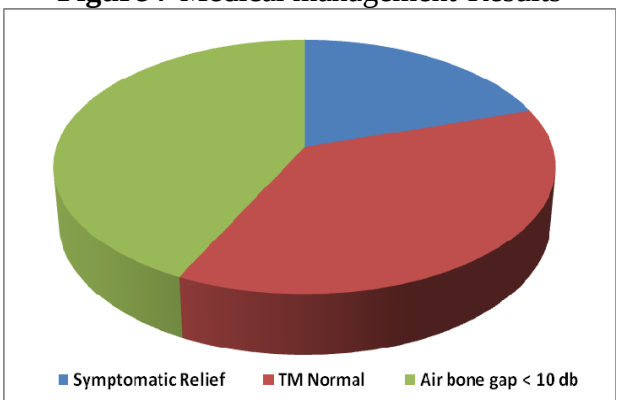

Figure8 Surgical Management-Results

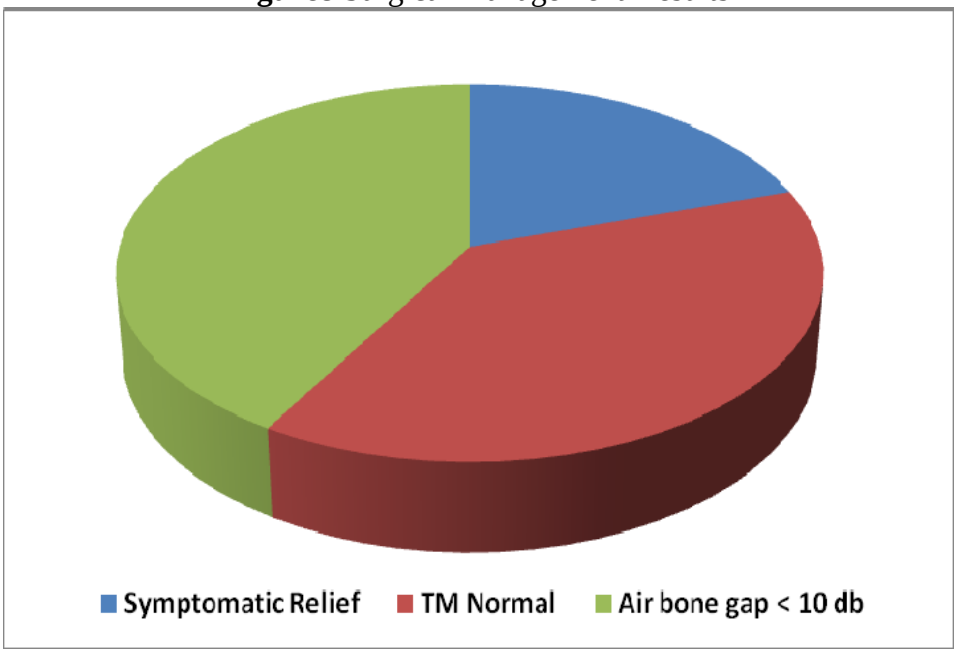

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Table 1 PTA Evaluation

Hearing Loss in db	**No.of Patients**	
	R	**L**
20 – 30	13	14
31 – 40	22	20
41 – 50	10	7
51 – 60	3	0
61 -70	0	0

Table 2 Tympanometry-Results

Tympanometry	**No.of Patients**	
	R	**L**
A	0	0
Ad	0	0
As	0	0
B	36	41
C	14	9

Zielhius et al [3] reviewed around 23 studies which used tympanometry as one of the diagnostic

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tool to provide an age specific prevalence rates and observed that the prevalence is bimodal with first peak, at 2 years. Second peak was when child attends a play group or nursery school, and then at 5 years of age when the child attends a primary school. But in our study there was no bimodal prevalence. About 60% of the patient were in the age group5-15years.

According to Tos et al,[4] Rovers et al,[5] secretory otitis media shows an increased prevalence in temperate climate when compared to summer, this is probably due to increased incidence of upper respiratory tract infection. Engels et al,[14] Rovers et al,[15] has concluded that there is slightly more risk in boys when compared to girls. In our study also there was more incidence inboys(58%)

Bluestone et al has suggested that there might be a casual relationship between parental smoking and both acute and chronic middle ear disease in children. But in some study by Engel, has found that when the other factors have no effect parental smoking isdetected.

Eustachian tube dysfunction can lead to poor aeration of middle ear cleft. Most commonly it is secondary to Allergy, Adenoid infection, GERD, Upper Viral Respiratory infection, or disorder in palatine Muscles. In our study, ET dysfunction was the major predisposing factor seen in 66% of patients followed by allergy (12%), GERD(8%).

American academy of paediatrics has strongly recommended the usage of pneumatic otoscopy as the primary diagnostic method. Tympanometry alone is a useful screening tool in the investigation secretory otitis media.[36]

Wafters GW, Jones JE in published in clinical otolaryngology about the predictive values of tympanometry in the diagnosis secretory otitis media. A type B tympanogram has a high sensitivity (0.90) in predicting middle ear effusion with goodspecificity(0.4)type_C'increasesthesensitivityofpredictingdrymiddleearto0.78. In our study,typeBcurvewasfoundin76%andtype_C'curvewasfoundin 24%.

Gates and other[39] found that in 45% of cases treated with antibiotics erythromycin ethylsuccinate and sulfisoxale, effusion cleared in one month and 55% cleared in two months. Mandle et al [29] in their study found that with amoxicillin, the clearance of effusion was significantly better than in the control groups. Blue stone et al [30]in their study found that the clearance of effusion did not show much difference between the groups who received a decongestants – antihistamine andplacebo.

Lambert et al, Rovers proposed that there is short term benefit with Prednisolone (1mg/kg) the clearance of the effusion is sling and temporary. Based on the rationale of adenoidectomy for children with Otitis media on size alone, has little scientific basis. But Gates et al, paradise et al, have demonstrated the effectiveness of adenoidectomy in the management of secretary otitis media. Further clinical evidence from the above studies propose that the effect of adenoidectomy is independent of adenoid size. The other classic rationale is improvement in Eustachian tube function. Honjo[36] showed improvement in equilibration of positive middle ear pressure after adenoidectomy but no specific change in the ability to equilibrate negative pressure and also no change in the static opening pressure of the tube.

Obstruction or dysfunction of the Eustachian tube either anatomic or functional is a logical rationale for the procedure.

The main goal of using tympanostomy tubes is prolonged ventilation of the tympanum. Removal of the Middle ear effusion and restoration of an aerated tympanum has shown prompt return of hearing to the pre infection levels in the vast majority of patients. Experimental evidence suggests that mucosal hyperplasia of the tympanum will return back to a more normal condition with aeration.[37] But Once the tubes are extruded however, the clinical benefit appearstoend.[32]

Gates and others [88] found a significantly better result in terms of hearing, longer time to

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recurrence , decreased duration of middle ear effusion, , and fewer repeat operations in the children with tympanostomy tubes as compared with those who were undergoing myringotomy and aspiration. Similar conclusions were reached by Madel, Bluestone, and Paradise.[38] Paradise[37] and paradise and others[33] argued that tympanostomy tubes should be used as the primary procedure of choice for patients with persistent OME, because tympanostomy tube placement is less expensive and less involved than adenoidectomy. They reserve adenoidectomy for cases with recurrent secretary otitismedia.

4. Conclusion

From our studies it is evident that secretory otitis media is a treatable condition of conductive hearing loss in children. In children, Eustachian tube dysfunction was mostly secondary to functional or mechanical obstruction and the common precipitating factor for secretory otitis media. GERD also was found to be associated with almost all adult patients. Study should be conducted about control of acid reflux can have any effect in these patients. From our study it was clear that medical management is useful in the control of acute episodes of secretory otitis media which is associated with frequent relapse andrecurrence.
Surgical management in the form of myringotomy / adenoidectomy with grommet insertion has shown to have better long term outcome in terms of hearing impairment and disease relapse and recurrence. In our study we used Shepards tympanostomy tubes which was associated with extrusion rate of 10% at 3 months follow up period. Further studies are should be done to compare the efficacy of various tympanostomy tubes on disease control and various complications. A long term follow up is needed to evaluate the disease relapse and recurrence, also to study the various sequlae of secretory otitis media like adhesive otitis media and cholesteatoma.
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Ethical approval: The study was approved by the Institutional Ethics Committee

5. Conflict Of Interest

The authors declare no conflict of interest.

6. Acknowledgments

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