

ORIGINAL RESEARCH

Prevalence of Allergic Rhinitis among Otitis Media with Effusion Patients Attending in ENT OPD in a Tertiary Care Center

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ABSTRACT

Background: Otitis media with effusion may run a relapsing and remitting course before ultimately resolving in later childhood. The etiological factors in adults may be idiopathic, barotraumas, nasopharyngeal carcinoma, radiotherapy, AIDS. The present study is designed to find out the prevalence of allergic rhinitis among otitis media with effusion patients attending ENT OPD in a tertiary care center.

Materials& Methods: A hospital based cross sectional study done on fifty patients with otitis media with effusion in ENT OPD at AGMC & GBP Hospital, Agartala (Tripura)during one year period. Detailed history, clinical examination in the form of ear examination with aural speculum & otoscope, tuning fork tests, anterior & posterior rhinoscopy, per oral examination were done. Medical management was given for initial 06 weeks to all OME patients, those who were not responding to medical therapy, were subjected to surgical treatment in the form of Myringotomy& Grommet insertion. Patients of allergic rhinitis were managed only medically.

Results: Children formed the majority of the study group and out of 50 patients, 22(44%) were from the age group of 6-10years; out of 50, males (35) outnumbered the females. The prevalence of allergic rhinitis among OME patients was 34%. Out of 17 allergic rhinitis patients, 11 patients (64.70%) were male & 6 patients (35.30%) were female.Out of 50 OME patients, 23 of them responded to the medication for the initial 6 weeks and 27 patients undergone surgical intervention. 18 patients (36%) had done myringotomy followed by grommet insertion whereas myringotomy alone was done on 9 patients (18%).

Conclusion: The prevalence of Allergic rhinitis among OME is very high, especially in children. Both surgical and medical management can be used in the treatment of OME, but surgical is more preferable in patient refractory to medical treatment.

Keywords: Otitis Media with Effusion (OME), Allergic Rhinitis (AR), Myringotomy, Grommet.

INTRODUCTION

Otitis media with effusion (OME), also called serous or secretory otitis media, is a collection of serous fluid that occurs within the middle ear cleft as a result of altered Eustachian tube

function.¹ Normally the Eustachian tube remains closed and protects the middle ear from entry of unwanted materials. Equilibration of pressure in the middle ear to ambient pressure occurs during opening, provided the tubal lumen is unobstructed by inflammatory edema, secretions, or, rarely, neoplasm or trauma. Tubal opening is a reflex mediated by barosensors through Jacobson's nerve.²

Diseases affecting the middle ear with intact tympanic membrane are numerous. To mention a few, one can start with middle ear effusion, Eustachian tube dysfunction, glomus jugulare, facial nerve damage, ossicular chain disruption, acute otitis media and malignant diseases.³

Fluid in the middle ear, a primary feature of Otitis media with effusion, is associated with a conductive hearing loss of up to 30 – 35 dB, though the degree and frequency dependence of individual losses vary. The conductive loss occurs because of a reduction of ossicular coupling caused by several mechanisms. At frequency greater than 1,000 Hz, the loss is caused by mass loading of the tympanic membrane by fluid, with decreases in sound transmission of up to 20 – 30dB. The effect increases as more of the tympanic membrane surface area is covered with fluid. At frequencies below 1,000 Hz, the hearing loss is caused by an increase in impedance of the middle ear space resulting from reduced middle ear air volume and possibly from negative middle ear static pressure, which is often associated with OME.⁴

Middle ear effusion persists for a short time following episodes of acute Otitis media although 90% of such effusions have resolved within 3 months. Otitis media with effusion may run a relapsing and remitting course before ultimately resolving in later childhood. Fifty percent of ears resolve spontaneously within 3 months and only 5% persists for more than 12 months.⁵

Many sequential studies have reported that between 20% - 50% of children will have an episode of Otitis media with effusion at sometime between the ages of 3 and 10 years. The etiological factors responsible in a specific child are likely to be multifactorial and a combination of the following factors: environmental, sex, Eustachian tube dysfunction, adenoid hypertrophy, unresolved acute Otitis media and allergy. The etiological factors in adults may be idiopathic, barotraumas, nasopharyngeal carcinoma, radiotherapy, AIDS.⁶

The diagnosis of OME is not easy, and there is significant variability in the ability of clinicians, especially primary care physicians and pediatricians, to diagnose it. Symptoms of OME are neither sensitive nor specific, and most children with OME are asymptomatic. Physical examination is also potentially inaccurate, because subjective impressions of the appearance of the tympanic membrane are difficult to quantify and graded. Furthermore, children may be uncooperative with the examination. The use of other diagnostic tools in addition to pneumatic otoscopy, such as impedance audiometry and myringotomy, further improve the diagnostic accuracy.⁷

Even though spontaneous resolution is the rule, the disease is clinically important for two reasons. First, because the variable conductive deafness product during early school years may impair a child's educational progress, and second, because OME is widely considered to be the precursor of all forms of chronic suppurative ear disease and their complications in later life.⁸ The present study is designed to find out the prevalence of allergic rhinitis among otitis media with effusion patients attending in ENT OPD in a tertiary care center.

MATERIALS& METHODS

A hospital based cross sectional study done on fifty patients with otitis media with effusion in ENT OPD at AGMC & GBP Hospital, Agartala (Tripura) during one year period.

INCLUSION CRITERIA

1. Patients with conductive hearing loss with air-bone gap greater than 10 db for more than 03 weeks with Type B tympanogram.
2. Patient agreed to participate in the study after signing informed consent.
3. Patients of all age and sex.

EXCLUSION CRITERIA

1. Patients not willing to participate.
2. Patients with gross systemic disability disease including malignancy.
3. Patients with craniofacial anomalies.
4. Patients with OME associated with Sensory Neural hearing loss.

METHODOLOGY

Detailed history, clinical examination in the form of ear examination with aural speculum & otoscope, tuning fork tests, anterior & posterior rhinoscopy, per oral examination were done. Aural speculum & otoscopic findings suggestive of OME like dull TM with restricted mobility, prominent Handle of Malleus, air bubbles or fluid level behind the TM were subjected for Pure Tone Audiometry (PTA) & tympanometry. Those with a suggestive PTA showing conductive hearing loss & type B tympanogram were included in the study.

The patients having clinical features of allergic rhinitis i.e. persistent, or intermittent nasal obstruction, sneezing, rhinorrhoea, itching of eyes, nose etc. were documented & correlated.

Radiological tests like X-ray nose & paranasal sinuses Water's view were done in patients suspected of allergic rhinitis, X-ray nasopharynx was done in case of Adenoids in children or any other suspected nasopharyngeal mass.

Medical management was given for initial 06 weeks to all OME patients, those who were not responding to medical therapy, were subjected to surgical treatment in the form of Myringotomy & Grommet insertion. Patients of allergic rhinitis were managed only medically.

PROCEDURE

Myringotomy is a surgical procedure in which a small incision is made on the tympanic membrane. The purpose of myringotomy is to relieve systems, to restore hearing, to take a sample of fluid for laboratory investigations and to insert ear tubes. Tympanostomy tubes or ear tubes or grommets are small tubes open at both ends that are inserted into the incision in the ear drum during myringotomy. They come in various shapes and sizes and are made of plastic or metal. They keep the incision from closing and are left in place until they fall out by themselves or removed. Thus, a channel is maintained between the middle ear and the external ear, allowing fluid to drain and preventing pressure from building in the middle ear.

RESULTS

The age of the patients range from 6 years to 35 years and the mean age of the patients were 16.72 ± 2.172 years and the majority of the patients were 6-10 years of age. The youngest patient was of 6 year and eldest was 35 years of age (table 1).

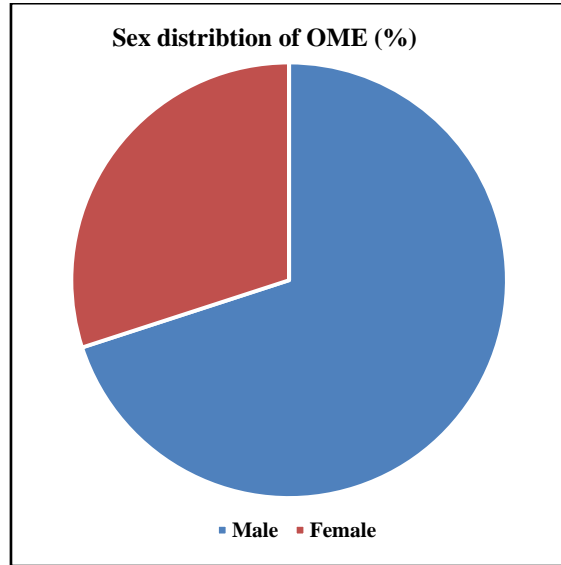
Table 1: Age Distribution of OME

Age in Years	No of patients (50)	Percentage (%)
6-10	22	44
11-15	15	30
16-20	05	10
21-25	03	06
26-30	03	06
31-35	02	04

≥ 36	00	00
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Out of 50 patients, 35(70%) were males and 15(30%) patients were females (figure 1).

Figure 1: Sex Distribution of OME



The majority of allergic rhinitis patients (41.17%) were 11-15 years of age. The youngest was 6 years and the eldest was 26 years of age (table 2).

Table 2: Age distribution of AR patients

Age in years	No. of patients	Percentage(%)
6-10	03	17.66
11-15	07	41.17
16-20	04	23.53
21-25	02	11.77
26-30	01	5.88
31-35	00	00
≥36	00	00
Total	17	100%

Prevalence of allergic rhinitis among OME patients was 34%. Out of 17 allergic rhinitis patients, 11 patients (64.70%) were male & 6 patients (35.30%) were female (table 3).

Table 3: Sex wise distribution of AR patients

Sex	No. of patients (N=17)	Percentage (%)
Male	11	64.70%
Female	6	35.30%

Out of 50 OME patients, 23 of them responded to the medication for initial 6 weeks and 27 patients undergone surgical intervention. 18 patients (36%) had done myringotomy followed by grommet insertion whereas myringotomy alone was done on 9 patients (18%) (table 4).

Table 4: Management of OME patients

Management	No. of patients (N=50)	Percentage (%)
Myringotomy+ grommet insertion	18	36%
Myringotomy	9	18%
Conservative	23	46%

DISCUSSION

In the present study, out of 50 OME, 22 patients (44%) were from the age group of 6-10 years, 15 patients (30%) were from 11 – 15 years, 5 patients (10%) were from 16 – 20 years, 3 patients (06%) were from 21 – 25 years & also from 26 – 30 years of age, 2 patients (04%)

were from the age of 31 – 35 years. It shows that OME is mainly a disease of childhood and in the UK 50% prevalence OME is seen in children aged 5 -7 years, while in the USA, a higher prevalence in the range 53 – 61% in children between 2 and 6 years has been reported. It is also reported to occur more in males.⁹In a study by Lee DH and Yeo SW (2004),out of 51 patients,33 were males and 18 patients were females.⁷ Another study done by Khan F et al (2006), out of 87 OME patients,58(66.6%) were males and 29(33.3%) were females and majority of the patients, 54(62%) were between 5-8 years.¹⁰

Out of 50, 17 patients (34%) had symptoms of allergic rhinitis like recurrent and excessive sneezing, rhinorrhoea, persistent or intermittent nasal obstruction, itching over eyes and nose etc. and their blood profile shows elevated serum IgE level, raised Total Leukocyte Count (TLC) & Differential Leukocyte Count (DLC) and absolute eosinophil count. X -ray of Paranasal Sinuses - OM view, done in all seventeen allergic rhinitis patients but no sinus pathology was detected.

Numerous studies are there that shows the relation between allergic rhinitis and OME.The prevalence of allergic rhinitis in OME has been found to vary from 14% to as much as 89%.^{1,11,12} Another case control study reporting higher frequency of OME in allergic children compared to age – matched non allergic children.^{13,14} Alles et al studied the prevalence of atopic disorders in 209 children with chronic otitis media with effusion and found AR in 89% of children.¹⁴Fernandez and McGovern studied 113 children with OME and found 83% to be allergic based on history and 92% positive skin test.^{15,16} In our study we could not perform the skin test or RAST as these facilities are not available here. Bernstein and co-workers reported in series of articles that approximately 23% of all children with OME are allergic based on history, physical examination, and skin or RAST.^{17,18} Zakzok and AI Anazy studied allergic rhinitis as a risk factor for hearing impairment in an epidemiological survey of 9540 children, 2529 children were identified with history of allergic rhinitis (26.51%). Hearing impairment was found in 450 children out of 2529 (17.8%). They concluded that allergic rhinitis might be a risk factor for hearing impairment.¹¹

A study by Reddy V (1998)¹⁹ showed that out of 256 cases 58 patients(23%) responded to medical treatment, another study by Khan et al(2006) showed that out of 87 patients, 34.5% well improved by medical treatment.²⁰ In our study 27 patients(54%) did not respond to medical treatment. Therefore, they were managed by surgical procedure in the form of myringotomy & grommet insertion. Myringotomy followed by grommet insertion was done on 18(36%) patients where the fluid was thick & mucoid and present in large quantities. Myringotomy alone was done on 09 patients(18%)having no obvious predisposing factors and the fluid was thin & serous. In a study conducted by Khan et al (2006)²⁰,out of 87 patients,57 patients, underwent surgical procedure, myringotomy alone was done on 07 (12.3%) of the patients, grommet insertion was done on 17 Patients(29.8%),adenoidectomy in 10 patients(17.5%),adenotonsillectomy in 12 patients(21%) and antral lavage in 03 patients(5.3%).

The management of OME is a controversial topic in otology. Seasonal variation, relapses and remissions after treatment do occur. The medical treatment is directed towards controlling the infection, allergy and reducing edema and inflammation of the Eustachian tubes, nasopharynx and nose and improving middle ear ventilation. Autoinflation or nasaldrops are used for this purpose. Antihistamines systematically with topical nasal steroid spray are useful in many patients. Antibiotic therapy for a longer period is also recommended for successful results. Systemic steroids are being used by many who claim cure of the disease, but it is usually not recommended as a routine therapy which is ordered mostly in intractable cases.

CONCLUSION

Prevalence of Allergic rhinitis among OME is very high, especially in children. Both surgical and medical management can be used in the treatment of OME, but surgical is more preferable in patient refractory to medical treatment. Grommet insertion is the most preferred method with the least number of recurrences; myringotomy alone shows quicker response in the recovery of hearing loss but has a higher recurrence rate.

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