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Original research article

A study on clinical profile of patients with chronic otitis media with tympanic membrane perforation

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Abstract

Incidence of COM is more common in developing countries, and affects both sexes and all age groups. Its overall prevalence rate in India is 46/1000 in rural population compared to 16/1000 in urban population. The hallmark presenting symptoms of COM are ear discharge and hearing loss. Ear discharge in active mucosal COM is mucoid or mucopurulent, non-offensive, constant or intermittent. Symptoms aggrevate mostly during upper respiratory tract infection or entry of water into the ear. Clinical examination including general physical examination, systemic examination, otological examination, tuning fork tests and examination under the microscope was done. Tympanic membrane perforations were classified into small, medium, subtotal and total perforations based on the number of quadrants involved, perforations limited to one quadrant were classified as small perforations, involving two quadrants as medium, three quadrants as subtotal and all the four quadrants with intact annulus as total perforations. In our study, out of 51 cases, 32 were males forming 62% of the total sample and 19 were females forming 38% of the total sample. The operated ear was more commonly left ear (29) forming 57% of the total sample and the rest right sided ear forming 43% of the total operated ears.

Keywords: Clinical profile, chronic otitis media, tympanic membrane perforation

Introduction

Chronic otitis media implies a long-standing infection of middle ear cleft, characterized by ear discharge and permanent perforation of tympanic membrane. Otitis media is defined as an inflammation of the middle ear, most likely a result of earlier acute otitis media, negative middle ear pressure or otitis media with effusion. It also implies concomitant inflammation of mastoid air cell system with an incidence higher in poor socioeconomic group. Poor nutrition and lack of health education has been attributed to the cause of this disease. A perforation is termed permanent when its edges are covered by epithelium and it does not heal spontaneously. Earlier COM was classified as safe/tubotympanic and unsafe/ atticoantral variants but now we have a new classification for COM [1, 2].

Incidence of COM is more common in developing countries, and affects both sexes and all age groups. Its overall prevalence rate in India is 46/1000 in rural population compared to 16/1000 in urban population.

The most common organism isolated is Pseudomonas aeruginosa. Other aerobic organisms include Proteus, Escherichia coli and Staphylococcus aureus, while anaerobes includes Bacteroidesfragilis and anaerobic Streptococci. An additional rare organism is mycobacterium species, however mixed infection is common in COM [3].

The histopathological changes seen in COM depends on the degree and extent of the disease. The changes seen in mucosal COM are chronic infiltrate consisting of lymphocytes, plasma cells and histiocytes associated with mucosal edema and increased capillary permeability. There is increased number of ciliated cells and goblet cells. An inflammatory granulation tissue develops during the early stage of healing. The florid granulation tissue may result in formation of aural polyp. Bone resorption occurs due to activated osteoclasts called resorptiveosteitis [4].

The hallmark presenting symptoms of COM are ear discharge and hearing loss. Ear discharge in active mucosal COM is mucoid or mucopurulent, non-offensive, constant or intermittent. Symptoms aggrevate mostly during upper respiratory tract infection or entry of water into the ear [5].

Hearing loss is conductive or mixed type of varying severity. The degree of hearing loss varies greatly with location and size of the perforation. A simple perforation of TM effects hearing as there is diminished surface area of the tympanic membrane resulting in dampened ossicular chain excursion and

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loss of phase difference as the sound directly reaches the round window. A simple TM perforation can lead to a maximum hearing loss of upto 45dB. Perforation in the posterior quadrant when directly exposes the round window niche; the 'round window baffle' effect is lost causing a greater hearing loss than expected for the size of perforation [6].

Methodology

The study included 51 patients between 10-60 years of age with Chronic Otitis Media with tympanic membrane perforation who attended the Department of ENT.

Study setting: It was a hospital-based study.

Study design: Cross-sectional prospective study.

Sampling technique: Patients with Chronic Otitis Media were selected by random sampling. A sample of 51 cases was selected.

Inclusion criteria

- Patients above 10 years and below 60 years irrespective of gender Patients with safe type of CSOM.
- Patients with intact ossicular chain.
- Patients with only conductive hearing loss.

Exclusion criteria

1. Age below 10 years and above 60 years of age.
2. Patients not willing for surgery.
3. Patients having sensorineural or mixed hearing loss.
4. Patients with atticoantral disease.
5. Patients with tympanosclerosis.
6. Patients with ossicular chain pathology.
7. Patients with history of long-term intake of systemic ototoxic drugs.

Method of collection of data

Patients who satisfied the above-mentioned criteria for selection were taken as subjects for the study after taking an informed and written consent. A detailed history of presenting illness, past history and personal history was taken

1. Clinical examination including general physical examination, systemic examination, otological examination, tuning fork tests and examination under the microscope was done.
2. Tympanic membrane perforations were classified into small, medium, subtotal and total perforations based on the number of quadrants involved, perforations limited to one quadrant were classified as small perforations, involving two quadrants as medium, three quadrants as subtotal and all the four quadrants with intact annulus as total perforations.
3. Location of the central perforation was denoted by their relationship to the handle of malleus as anterior, posterior and inferior.
4. Audiological assessment was done by Pure Tone Audiometry. Pure tone average was calculated by taking average of air conduction thresholds at 500Hz, 1kHz, 2kHz and 4kHz.
5. Air bone gap was assessed similarly.
6. Relevant radiological investigations was done.
7. Management by type 1 tympanoplasty (under lay technique) with cortical mastoidectomy was done
8. Follow up of patients was done 3 months post operatively to determine graft uptake and hearing improvement.

Results

Patients between the age group of 15-60 years were included in our study. The youngest patient included in the study was of 22 years and the eldest was of 60 years old. Maximum no of patients were seen in the age group 20-30yrs.

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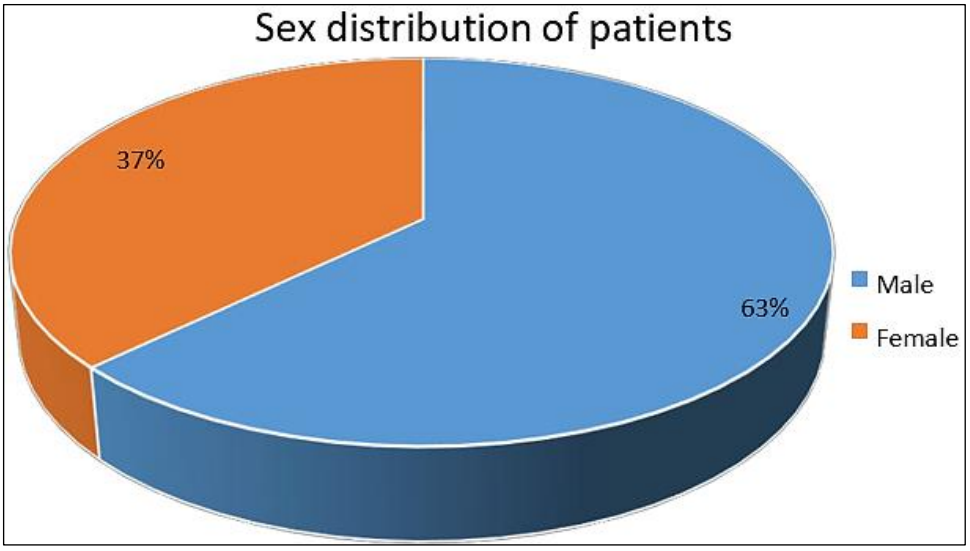

Fig 1: Sex distribution of the patients

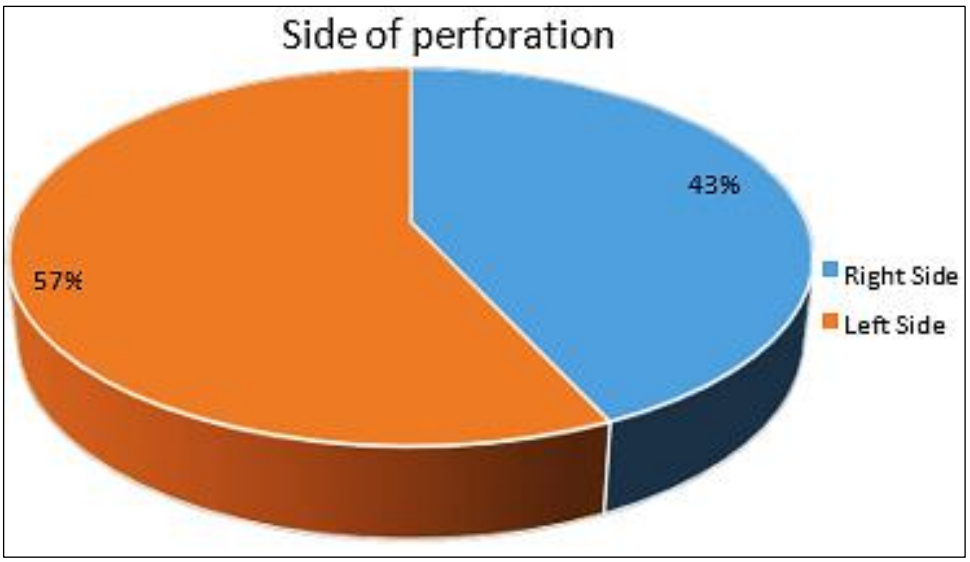

Fig 2: Side of perforation operated

In our study, out of 51 cases, 32 were males forming 62% of the total sample and 19 were females forming 38% of the total sample. The operated ear was more commonly left ear (29) forming 57% of the total sample and the rest right sided ear forming 43% of the total operated ears.

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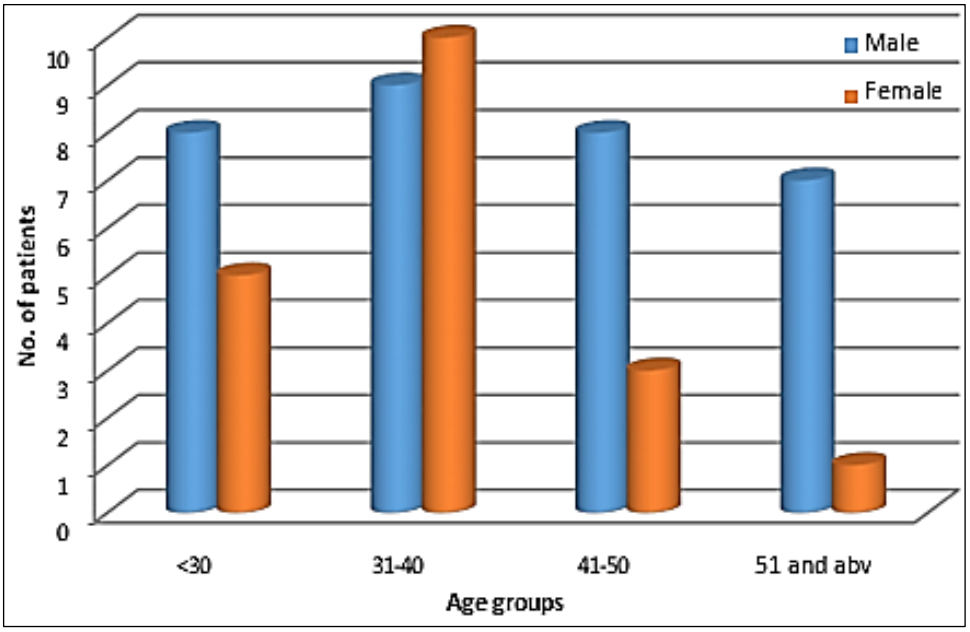

Fig 3: Age distribution of the patients

Table 1: Age with respect to side of perforation

Group Statistics					
	L_R	**N**	**Mean**	**Std.**	**Std. Error**
				Deviation	
Age					Mean
	R	22	37.6818	9.24475	1.97099
	L	29	39.1034	11.75750	2.18331

Table 2: Sex distribution of patients T-Test

Group Statistics					
	Sex	**N**	**Mean**	**Std.**	**Std. Error**
				Deviation	
Age					Mean
	M	32	40.0625	11.57009	2.04532
	F	19	35.8421	8.59110	1.97093

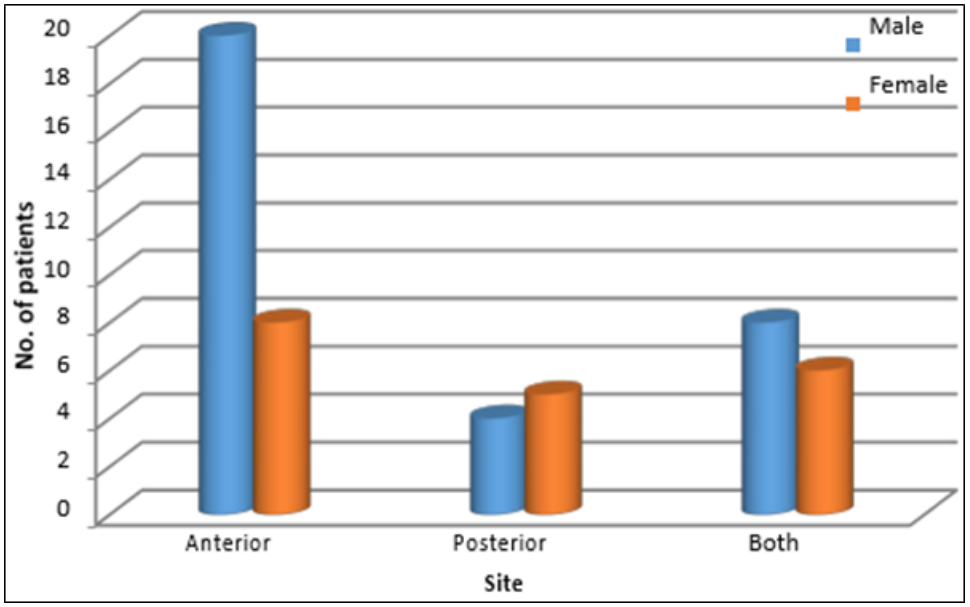

Fig 4: Site of perforation

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Tab 3: Size of perforation

Size of perforation	Frequency	Percent
Medium perforation	27	53%
Small perforation	10	17%
Total and subtotal perforation	14	30%
total	51	100%

Discussion

Chronic suppurative otitis media with tubotympanic perforation forms a large chunk of patients presenting to ENT clinics with hearing impairment. Study by Sakagami7 *et al*. observed that COM is the main cause of hearing loss, in which 82 out of 91 cases with chronic suppurative otitis media had an TM perforation with intact ossicular chain. Myringoplasty should be considered in all cases to provide better hearing and to protect middle ear cleft from further complications.

A study on clinical profile of COM mucosal type with special reference to audiological pattern in relation with size, site and duration of perforation and surgical management was carried out on 51 patients in the department of ENT, Adichunchanagiri Institute of Medical Sciences, Mandya. In our study, like other studies such as Voss *et al*., Ahmed SW *et al*., Nepal *et al*. etc. we observed that larger the perforation of the tympanic membrane greater the decibel loss in sound perception.

Perforations involving posterosuperior and posteroinferior quadrant were found to have maximum hearing loss as compared to anterior perforations which can be attributed to the "Round Window Baffle' effect. In our study posteriorly placed perforations seems to have relatively larger hearing loss. Such observations were also made by Oluwole M *et al*. [7] did not observe any significant differences in the hearing loss in anterior versus posterior quadrant perforations.

Majority of patients with larger air bone gap were found to have discharging ear for longer duration as compared to those with lesser degree of hearing loss.

Post-operative follow up-Graft uptake and residual perforation.

In our study, results of graft uptake out of 51 cases, 3 cases were having residual perforation at the end of our follow up of three months. Residual perforations were more in subtotal and total perforation. In studies conducted by Glasscock *et al*. the graft success rate in dry ear was 93.1%, in Ceylan *et al*. it was 88% and Nagle SK *et al*. [7] it was 88%.

In our study, patients below 10 and above 60 years were excluded. Maximum number of patients were in the age group of 20-30 years. Children are considered to be poor candidates for tympanoplasty as they are prone to recurrent respiratory tract infections attributed to immaturity in immune system and Eustachian tube pathology. Out of 51 cases 32 were males and 19 were females. In a study done by Pannu KK *et al*. [8] out of 100 patients 52 were male and 48 were females.

Some authors concluded that the reason behind males more in number considered to females could be due to the fact that male sex being more aware of the disease and the incapacity produced because of the disease, as they are the working members of the society.

Conclusion

Young and middle-aged population are the most common sufferers of chronic otitis media, unilateral ear involvement in COM was found to be more common than bilateral ear involvement.

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