

Original Research Article

DOI: <http://dx.doi.org/10.18203/issn.2454-5929.ijohns20202210>

Hard of hearing as a presenting complaint in patients with chronic otitis media

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Received: 21 March 2020

Revised: 16 April 2020

Accepted: 17 April 2020

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ABSTRACT

Background: Chronic otitis media (COM) is highly prevalent disease of middle ear. Common presenting complaint is ear discharge. Though pathogenesis of COM involves alteration of conductive mechanism of hearing, it has been observed that hard of hearing (HOH) is not the presenting complaint in all cases of COM. Therefore, this study is taken up to know prevalence of hard of hearing as a presenting complaint in patients with COM.

Methods: 100 patients were taken up for study. Detailed history and examination were done. The samples were assessed based on gender, age, presenting complaints, duration between onset of ear discharge and HOH and the type of hearing loss.

Results: Out of 100 patients with COM, HOH was presenting complaint in 60%. Ear discharge was most common complaint. In 10% HOH was the only complaint. Among 40% who did not complain of HOH, 24% gave history of HOH and 16% patients denied any history of HOH.

Conclusions: Though pathogenesis of COM involves alteration of conductive mechanism of hearing but yet not all patients of COM present with or give history of HOH. In COM as the disease process advances slowly, the patient appears to adapt to the loss so that thresholds of 30-40 dB HL are common with little complaint from the patient. Our present study indicated that among 100 patients, 84 patients presented with or gave history of HOH and 16 patients did not have presenting complaint or history of HOH but those 16 patients were proved to be having conductive hearing loss on examination.

Keywords: Chronic otitis media, Hard of hearing, Ear discharge, Presenting complaint

INTRODUCTION

Chronic otitis media (COM) is a highly prevalent disease of the middle ear cleft. It poses more serious health problem in developing countries where there is lack of specialized medical care, where people suffer from malnutrition and live in poor hygienic conditions.

Chronic otitis media is defined as the chronic infection of the middle ear cleft including the middle ear, mastoid air

cell system and the eustachian tube, in the presence of persistent tympanic membrane perforation.^{1,2} COM and its associated problems constitute a hidden disability.³ The prevalence of COM in India as reported by WHO range between 6% to 7.8%.

Patients with chronic otitis media commonly present with ear discharge, ear ache, hard of hearing, ringing sensation in the ear, fever, giddiness etc. The most common presenting complaint is ear discharge.

In COM there is conductive hearing loss as a result of tympanic membrane perforation, middle ear atelectasis, tympanosclerosis, ossicular destruction, and cholesteatoma. Infection and inflammatory components transmit to the middle ear through round window to cause cochlear destruction and sensorineural hearing loss.⁴

Though the pathogenesis of COM predominantly involves the alteration of conductive mechanism of hearing, it has been observed that hard of hearing is not a presenting complaint in all cases of COM. Therefore, this study was taken up to know the prevalence of hard of hearing as a presenting complaint in patients presenting with chronic otitis media.

METHODS

This is a prospective study carried out in the department of Otorhinolaryngology Head and Neck surgery, Vijayanagara Institute of Medical Sciences, Ballari from December 2018 to November 2019. This study was approved by institutional ethical committee (No. VIMS/MED/STAFF-EC/48/2018-19). Informed written consent was taken from all the participating patients.

Inclusion criteria

Inclusion criteria were 100 patients attending department of ENT as outpatients or inpatients with complaints suggestive of Chronic otitis media.

Exclusion criteria

Exclusion criteria were patients who had history of congenital hearing loss, history of exposure to ototoxic drugs and history of chronic exposure to noise. Patients with systemic illness like diabetes, hypertension, dyslipidemia, ischemic heart disease and renal disease. Patients who were operated for COM. Patients who had predominantly sensorineural hearing loss were excluded from the study.

Sample size was calculated using the below formula.

$$\text{Sample size} = \frac{Z\alpha^2 p (1-p)}{d^2}$$

$Z\alpha^2$ = Standard normal variate, 5% = 1.96

P = Expected proportion from population, 0.068

d = Absolute error, 5%

Sample size = 97.

All the patients underwent detailed history taking followed by general physical examination and ENT examination as per proforma. Tuning fork tests like Rinne's test, Weber's test and absolute bone conduction tests (ABC) were done using 256 Hz, 512 Hz and 1024

Hz tuning forks, and the relevant data was recorded. The samples were assessed based on gender, age, presenting complaints, laterality of COM, duration between onset of ear discharge and hard of hearing and the type of hearing loss.

Since this being a clinical based study and pure tone audiometry was not accessible in all circumstances, we consider tuning fork tests for assessing the hearing loss.

Based on the type of hearing loss the samples were grouped in to 1) normal hearing with Rinne's test positive, Weber's test centralized/equal in both ears, ABC test same as examiner, 2) conductive hearing loss in which Rinne's test was negative, Weber's test lateralized to worst ear, ABC test same as examiner, 3) sensorineural hearing loss in which Rinne's test positive, Weber's test lateralized to better ear, ABC test reduced, and 4) mixed hearing loss with Rinne's test negative, ABC test reduced.

The results were analyzed using simple statistical analysis like frequency, percentages, proportions and chi square test.

RESULTS

A prospective study was conducted on 100 patients attending the department of otorhinolaryngology with complaints suggestive of COM. The patient's age ranged from 10-70 years. Mean age of the patients was 30.44 years. Maximum numbers of patients were in the age group of 21-30 years (Table 1). Among the 100 patients, 56% patients were males and 44% patients were females. Male to female ratio was thus 1.27: 1.

Table 1: Distribution of age groups.

Age group in years	Frequency
1-10	3
11-20	26
21-30	34
31-40	16
41-50	10
51-60	6
>60	5
Total	100

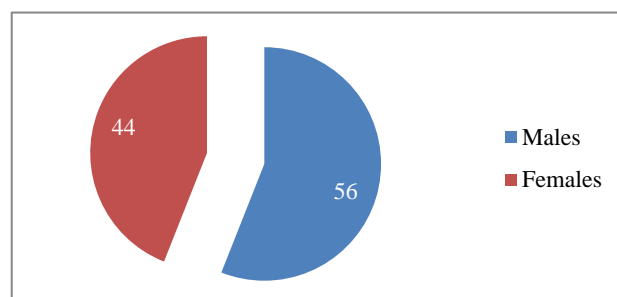


Figure 1: Distribution of patients according to gender.

Hard of hearing was the presenting complaint in 60% patients, ear discharge in 90%, ear ache 17%, tinnitus in 13% patients (Table 2). Hard of hearing was the only presenting complaint in 10% patients, Ear discharge was the only presenting complaint in 40% patients, in 50% patients both ear discharge and hard of hearing were the presenting complaints. Among 40 patients who did not have hard of hearing as a presenting complaint, 24 patients gave positive history of hard of hearing during eliciting detailed history and 16 patients denied any history of hard of hearing (Table 3).

Table 2: Distribution of patients according to presenting complaints.

Presenting complaint	Frequency
Ear discharge	90
Hard of hearing	60
Ear ache	17
Tinnitus	13
Others	0

Table 3: Distribution of patients according to complaints.

Presenting complaint	Frequency
Only hard of hearing	10
Ear discharge and hard of hearing	50
Only ear discharge	40
No hard of hearing	40
Hard of hearing only in history	24
No hard of hearing complaint and history	16

In 26% patients with hard of hearing, hearing was impairing their day to day activities. The mean duration between onset of ear discharge and hard of hearing was 2.68 years, (range 2 months to 10 years). Bilateral COM was present in 23% and 77% had unilateral COM (36 were right COM cases and 41 were left COM).

Table 4: Type of hearing loss in patients who had hard of hearing as the only presenting complaint.

Type of hearing loss	Frequency	Unilateral COM	Bilateral COM
Mild conductive loss	0	0	0
Moderate conductive loss	4	4	0
Severe conductive loss	6	3	3
Mixed loss	0	0	0
Total	10	7	3

Ninety-two percentage had conductive hearing loss, 8% had mixed hearing loss.

In patients who had hard of hearing as the only presenting complaint (10%), severe conductive hearing loss was most commonly observed (Table 4).

In patients who had both ear discharge and hard of hearing as the presenting complaints (50%), in these patients also severe conductive hearing loss was most commonly observed (Table 5).

Table 5: Type of hearing loss in patients who had both ear discharge and hard of hearing as presenting complaint.

Type of hearing loss	Frequency	Unilateral COM	Bilateral COM
Mild conductive loss	1	1	0
Moderate conductive loss	16	16	0
Severe conductive loss	30	24	6
Mixed loss	3	1	2
Total	50	42	8

Table 6: Type of hearing loss in patients who did not complain of hard of hearing both in presenting complaints and history.

Type of hearing loss	Frequency	Unilateral COM	Bilateral COM
Mild conductive loss	10	9	1
Moderate conductive loss	4	4	0
Severe conductive loss	2	1	1
Mixed loss	0	0	0
Total	16	14	2

Table 7: Type of hearing loss.

Patients with	Mild CHL	Moderate CHL	Severe CHL	Mixed loss
Hard of hearing as a presenting complaint	1	20	36	3
No complaint of hard of hearing	9	4	2	1

χ^2 value=34.6169 p value is <0.00001(significant).

In patients who did not complain and did not give history of hard of hearing (16%), it was observed that mild conductive hearing loss was most common (Table 6).

On applying chi-square test significant correlation was found between the presenting complaints of the patients and the type of hearing loss found on examination (Table 7).

DISCUSSION

Out of 100 patients attending the department of ENT with complaints suggestive of chronic otitis media, the age ranged from 10 to 70 years with mean age of 30.44 years. Majority of the patients fell in the age group of 21 to 30 years (34%). This is very well in agreement with a study by Islam et al, which reported that the maximum number of patients were in the age group 21-30 years (38.67%).⁵

Male to female ratio in our study is 1.27:1 with males 56% and females 44%. Our results were not approved with the results of Vanderveen et al, while it is in lines with the study of Islam et al and Siddique et al, Vanderveen et al stated that there is no difference between the gender in patients with CSOM.^{6,5,7} Islam et al and Siddique et al found that the middle ear disease is more common in males.

Hard of hearing was the presenting complaint in 60% patients, ear discharge (90%) was the most common presenting complaint. These findings were similar to the study performed by Islam et al, Kang et al and Weilinga et al.^{5,8,9}

In 26 patients (26%) with hard of hearing, hearing was impairing their day to day activities. The mean duration between onset of ear discharge and hard of hearing was 2.68 years.

In our study 23% were bilateral COM cases and 77% were unilateral (36% were right COM cases and 41 were left COM). This is similar to that reported by Akinpelu et al.¹⁰

In patients who had hard of hearing as the only presenting complaint (10%) severe conductive hearing loss was most common. Also, in patients who had both ear discharge and hard of hearing as the presenting complaints (50%) severe conductive hearing loss was most common. In patients who did not complain and did not give history of hard of hearing (16%) mild conductive hearing loss was most common.

Our study indicates that patients who had complaints or history of hard of hearing had severe conductive hearing loss most commonly on examination and patients who had no complaints or history of hard of hearing most commonly had mild conductive hearing loss on examination. One of the cardinal symptoms of COM is hearing loss and usually this is conductive in type although sensorineural loss may occur. In the early stages of disease, conductive hearing impairment occurs in most cases but this is usually mild and often only causes significant handicap if disease is bilateral. As the disease

process advances only slowly, the patient appears to adapt to the loss so that thresholds of 30-40 dB HL are common with little complaint from the patient. In bilateral disease this constitutes a significant handicap and hearing rehabilitation including reconstructive surgery may be a priority for the patient.¹¹

On applying chi-square test significant correlation was found between the presenting complaints of the patients and the type of hearing loss found on examination. Thus, there is a significant association between the presenting complaint of the patient and the type and degree of hearing loss.

CONCLUSION

Chronic otitis media is a disease of middle ear cleft with symptoms of ear discharge, hard of hearing, ringing sensation in the ear etc. Though the pathogenesis of COM involves alteration of conductive mechanism of hearing but yet not all patients of COM present with or give history of hard of hearing. In COM as the disease process advances only slowly, the patient appears to adapt to the loss so that thresholds of 30-40 dB HL are common with little complaint from the patient.

Our present study indicated that among 100 patients, 84 patients presented with or gave history of hard of hearing and 16 patients did not have presenting complaint or history of hard of hearing but those 16 patients were proved to be having conductive hearing loss on examination.

Even though this might be a limited sample study, we need larger studies to understand the in-depth mechanism involved in COM which makes the patient unaware of hard of hearing always.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Hubballi RK, Koripalli K. Hard of hearing as a presenting complaint in patients with chronic otitis media. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:1115-9.