

Clinico-demographic Profile of Tympanic Membrane Perforation Cases in Tertiary Care Hospital in Bundelkhand Region of India

Bhoopendra Singh¹, Jyoti Kumar Verma²

ABSTRACT

Introduction: Chronic Otitis Media is a common public health problem which is often wrongly trivialized by people. Aim of present study was to find out clinico-epidemiological pattern of tympanic membrane perforation in a tertiary care hospital in Bundelkhand region.

Material and Methods: Present study was carried out in Department of ENT, M.L.B. Medical College, Hospital, Jhansi from Dec., 2012 to September 2014 on 40 cases of chronic otitis media of safe or tubo-tympanic type having small, medium and large perforation. Approval from Ethics Committee and informed consent were taken prior to study. Detailed history was taken and complete general and systemic examination was conducted and any relevant positive finding was recorded. Investigations like complete haemogram, urine examination, tuning fork test, pure tone audiometry and patch test were conducted.

Results: Majority (40%) patients were in the age group of 20-30 years followed by 10-20 years age group (30%). Male outnumbered female patients and male to female ratio was approximately 2:1. Majority patients (65%) were from rural area. Complaint of ear discharge (100%) was present in all cases followed by deafness (90%). Most common (55%) tympanic membrane perforation was medium size central perforation followed by large size perforation (27.5%). Majority of cases (85%) had a conductive hearing loss between 21-50 db.

Conclusion: Health awareness campaign, improved health education and easy accessibility to health care facilities can reduce the morbidity and mortality due to tympanic membrane perforation.

KeyWords: Tympanic Membrane Perforation, Chronic Otitis Media, Clinico-demographic Profile, Bundelkhand Region.

INTRODUCTION

Tympanic membrane is a translucent, lustrous gray-colored and oval-shaped structure which separates external ear from the middle ear. Anterior and posterior malleolar folds divides it into pars tensa and pars flaccida.¹ Tympanic membrane perforation increases the potential to middle ear cleft infection which may result in hearing impairment.² Previous studies^{3,4} have reported 10%-50% prevalence for tympanic membrane perforation in explosion cases. There is high prevalence of tympanic membrane perforation in developing countries like India. This is due to infection of middle ear resulting from overcrowding, malnutrition, poverty, ignorance etc.^{5,6} There are inflammatory and traumatic causes of tympanic membrane perforations. Acute suppurative otitis media (ASOM) and chronic suppurative otitis media (CSOM) are

the examples of inflammatory type of tympanic membrane perforation. Barotrauma and direct trauma causes traumatic type of tympanic membrane perforation.

Tympanic membrane perforations are classified into small, medium, large and total perforation on the basis of extent and size of perforation.⁷ On the basis of location, perforation may be central, marginal and attic perforation.⁸ There is a paucity of literature on tympanic membrane perforation in developing countries like India. Therefore aim of present study is to find out clinico-epidemiological pattern of tympanic membrane perforation in a tertiary care hospital in Bundelkhand region.

MATERIALS AND METHODS

Present study was a cross-sectional prospective study, carried out in the E.N.T. Department, M.L.B. Medical College, Hospital, Jhansi from Dec., 2012 to September 2014. During this period, 40 cases of chronic otitis media of safe or tubo-tympanic type having small, medium and large perforation were admitted for myringoplasty in the department of E.N.T. Only those cases having perforation and which were dry at the time of operation were selected. An attempt was made to select only those cases preferably which were dry for at least 4 weeks before surgery and age above 10 years and below 60 yrs. Patients having active discharge, any ossicular dysfunction, unsafe or attic antral disease, any complications of CSOM, any external ear pathology, and sinonasal pathology were excluded from study. Approval from Ethics Committee and informed consent were taken prior to study. Detailed history was taken and complete general and systemic examination was conducted and any relevant positive finding was recorded. Investigations like complete haemogram, urine examination, tuning fork test, pure tone audiometry and patch test were conducted.

Otological Examination

Otological examination was completed by otoscopic examination to see the condition of external auditory

¹Assistant Professor, Department of E.N.T, Government Allopathic Medical College Banda (U.P.), ²Senior Resident, Department of E.N.T, Government Allopathic Medical College Banda (U.P.), India

Corresponding author: Dr. Jyoti Kumar Verma, Senior Resident, Department of E.N.T, Government Allopathic Medical College Banda (U.P.), India

How to cite this article: Singh B, Verma JK. Clinico-demographic profile of tympanic membrane perforation cases in tertiary care hospital in Bundelkhand Region of India. International Journal of Contemporary Medical Research 2021;8(1):A1-A4.

DOI: <http://dx.doi.org/10.21276/ijcmr.2021.8.1.20>



meatus, external auditory canal and tympanic membrane as otitis externa, aural polyp or perforation. Through the perforation, middle ear mucosa and ossicular chain was also inspected. Pure tone audiometry and tuning fork tests e.g. Rinne's Weber's and A.B.C. tests were performed to know the amount and type of deafness. Paper patch test was done which sometimes exclude disease like tympanosclerosis as there will be no hearing gain with patch test in these cases.

RESULTS

In present study, total 40 patients were included. Maximum patients (40%) in this series were in the age group of 21-30 years followed by 10-20 years age group (30%). Majority of patients were male (65%) and male: female ratio in the present series was approximately 2: 1. Maximum numbers of patients were from rural areas (65%) and only 35% cases from urban areas. All patients in the present series gave history of ear discharge some time or the other during the course of their illness. Thirty six (90.0%) cases gave a history of noticeable deafness in one or both ears. Four patients (10%) gave history of tinnitus and two patients gave history of itching in ear. Some patients complain some time ear pain & aural fullness. (Table-1)

Medium size central perforation was found in most of the cases (55.0%) followed by large size perforation (27.5%) and small size perforation (17.5%). But small and large perforations were also included in the present series. (Table 2)

Tuning fork tests were conducted in all cases. Rinne's test was found to be negative in affected ear and ABC was found to be normal. A pure tone audiometry (PTA) was carried out in all cases. The table 3 shows an average degree of hearing loss in three speech frequencies 500, 1000 and 2000 HTZ. It is apparent that majority of cases (34) had a conductive hearing loss between 21-50 dB (85%). Only 3 cases had a hearing loss of more than 50 dB. Above table shows the type of hearing loss in which 30 patients have totally conductive

Parameter	Observation		
Age	Age group	No. of cases	% of cases
	10-20	12	30%
	21-30	16	40%
	31-40	8	20%
	41-50	2	5%
	50-60	2	5%
Gender	Gender	No. of cases	% of cases
	Male	26	65
	Female	14	35
Residence	Area	No. of cases	% of cases
	Rural	26	65
	Urban	14	35
Chief Complaints	Complaints	No. of cases	% of cases
	Otorrhoea	40	100.0
	Deafness	36	90.0
	Tinnitus	4	10.0
	Itching	2	5.0

Table-1: Demographic Profile of Cases

Parameter	Observation		
Size of perforation	Size	No. of cases	% of cases
	Small	7	17.5
	Medium	22	55.0
	Large	11	27.5
Shape & Position	Shape	No. of cases	% of cases
	Central	23	57.5%
	Posterior	6	15%
	Anterior	2	5%
	Marginal	3	7.5%
	Kidney Shape	3	7.5%
	Subtotal	3	7.5%

Table-2: Characteristics of Tympanic Membrane Perforation

Parameter	Observation		
Assessment of hearing	Hearing Loss (DB)	No. of cases	% of cases
	0-10	-	-
	11-20	3	7.5
	21-30	7	17.5
	31-40	20	50.0
	41-50	7	17.5
	>50	3	7.5
Type of hearing loss	Hearing loss (DB)	Conductive-Type	Mixed Type
	0-40	30	-
	41-50	1	6
	>50	-	3
Pattern of hearing loss	Graph/HL	Conductive	Mixed
	Flat type	20	3
	Zigzag type with maximum HL at LOW	5	1
	MID	4	2
	High	2	3

Table-3: Characteristics of Hearing Loss in Study Group

type between 0-40 db & between 41 -50 db 1 pt have conductive and 6 patients have mixed hearing loss. Above 50 db all 3 patients had mixed hearing loss.

DISCUSSION

Table 1 shows demographic profile of cases in present study. In present study, forty cases, ranging from 11 to 60 years of age of either sex, with dry tubo-tympanic type of perforation underwent myringoplasty using four types of graft materials. Maximum cases (40%) were in the age group of 21-30 years. The mean age of all the cases together is 28.2yrs with a median age of 29 years. Similar findings were noted in the study of Singh et al.⁹ in which the mean age of was 28.9 years and in the study of Dornhoffer et al.,¹⁰ mean age was 28 years. Accounting 40% in the present study which is near about with Vineetha et al.¹¹ and Loy et al.¹² Probably this is the age for jobs and also of marriage which compel the patients for reconstructive surgery.

Present study shows that the ratio between male (65%) and female (35%) was 2:1 Similar findings were noted in the

study of Dornhoffer et al.¹⁰ in which tragal perichondrium tympanoplasties were performed on 55% males and 45% on females patients. In the study of Strahan et al.¹³ 62% were males and 38% were females. Results of present study also correlate with the studies done by Rao et al.¹⁴ and Vijaya et al.¹⁵ It is due to marriageable age of male and female and early attention to medical treatment. Male also work outside so it has prone to get infection and trauma.

Table 1 shows urban/rural distribution of cases in which 35% belonging from urban area and 65% from rural area. It is due to poor education, medical attention and poor socioeconomic status. In our study, Otorrhoea (100%) was the most common chief complaint presented by the study group. Similar results were also observed in the study done by Adegbiiji et al.¹⁶

Table 2 shows the characteristics of tympanic membrane perforation. In twenty two (55%) cases there was a medium sized central perforation, occupying two-fourth or any two quadrants of tympanic membrane. 11 cases (27.5%) had large, occupying two-fourth or any two quadrants of tympanic membrane and only 7 cases (17.5%) had small central perforation, occupying one-fourth area of tympanic membrane or limited to one quadrant of tympanic membrane. Similar selection criteria regarding the size of perforation was used in the study of Indorewala et al.¹⁷ In present study, majority of tympanic membrane perforation was central (57.5%) in position followed by posterior (15%) in location. In studies done by Adegbiiji et al.¹⁶ and Nahata et al.¹⁸ most common position of tympanic membrane perforation was central position similar to present study.

In our study the most common cause of chronic otitis media is infection followed by trauma, which is similar to studies done by Rizer et al.¹⁹ and Raj et al.²⁰ All the above cases remained dry at least for four weeks pre-operatively. Cases were evaluated audio-logically and showed adequate Cochlear reserve and good Eustachian tube function pre-operatively. Maximum number of cases (20, 50%) had hearing loss from 30-40 dB followed by 10 cases (25%) had hearing loss of more than 40 dB and 10 cases (25%) had hearing loss of less than 30 dB. The large perforations had a mean AC threshold of 32 db, BC of 12 db and mean ABG of 20db. Moderate size perforation had a mean AC threshold of 28 db, BC of 10 db and mean ABG of 18 db. Our results are comparable with studies conducted by Dornhoffer et al.¹⁰ and Singh et al.⁹

CONCLUSION

Majority of patients (40%) were in the age group of 20-30 years followed by 10-20 years age group (30%). Male outnumbered female patients and ratio was approximately 2:1. About two third patients were from rural area. Complaint of ear discharge (100%) was present in all cases followed by deafness (90%). The incidence of disease was higher in cases of illiterates and low socio-economic status. Most common (55%) tympanic membrane perforation was medium size central perforation followed by large size perforation (27.5%). Majority of cases (85%) had a conductive hearing loss between 21-50 db.

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Source of Support: Nil; **Conflict of Interest:** None

Submitted: 06-12-2020; **Accepted:** 30-12-2020; **Published:** 31-01-2021