

Original Research Article

Evaluation of Contralateral Ear in Patients with Unilateral Chronic Otitis Media

Dr. Ankit Kumar Tiwari¹ (Senior Resident), Dr. Surendra Singh Moupachi² (Professor and Head), Dr. Himanshu Singh³ (Ex. Senior Resident) & Dr. Neeraj Kumar Dubey⁴ (Senior Resident)

Department Of Otorhinolaryngology, Shyam Shah Medical College, Rewa (M.P.)^{1,2&4}
Department of General Medicine, M. G. M. Medical College, Indore³

Corresponding author: Dr. Neeraj Kumar Dubey

Abstract

Background – Chronic suppurative otitis media is a permanent abnormality of the middle ear which is most likely as a result of earlier acute otitis media, negative middle ear pressure, otitis media with effusion. It requires evaluation of both the ear as disease in one side, affect another ear also.

Aim & objective – To know the status of contralateral ear in patients with unilateral chronic otitis media and role of otoendoscopy in its assessment.

Method – A prospective observational study was done on 100 patients of both the sex, with chronic otitis media in one ear. Contralateral ear of all patients was analysed clinically using otoscope, audiological, endoscopically using otoendoscope.

Result – Out of 100 patients 27% were male and 73% were female. Otoendoscopy of contralateral ear reveals out of 100 patients, 36% had normal finding, 51% had normal hearing while 32% showed mild conductive hearing loss in CLE.

Conclusion – Evaluation of contralateral ear in unilateral chronic otitis media is crucial as it affect other ear in terms of hearing loss, tympanic membrane retraction and even chronic otitis media up to some extent.

Key words – Chronic otitis media, Contralateral ear, Otoendoscopy.

1. Introduction

Chronic suppurative otitis media is a permanent abnormality of the pars tensa or flaccida, most likely as a result of earlier acute otitis media, negative middle ear pressure, otitis media with effusion. COM is a long-standing inflammation of mucoperiosteum of middle ear cleft which is characterized by ear discharge and a permanent perforation on pars tensa or pars flaccida. Chronic otitis media is divided into mucosal type of chronic otitis media and squamous type of chronic otitis media. There are various theories on pathogenesis of chronic otitis media.(1) Otitis media seems to exist through a continuous series of epithelial and subepithelial events, and, after the initial triggering episode serous or purulent becomes serous-mucoid, then mucoid, and, in the absence of therapeutic resolution, chronicity may ensue.(2)

In case of chronic otitis media, affected ear will show changes in its anatomy and physiology along with it other ear will also show some degree of changes at microscopic level . Since both the ears share common nasopharyngeal drainage pathway therefore assessment of contralateral ear is essential. Pathological changes in one ear affect physiology of other ear which is responsible for disease in contralateral ear.(3)

The precise and critical evaluation of both ears plays a fundamental role in the prognostic evaluation of the patient, because the ear with established CSOM can serve as a guide for the probable evaluation in the contralateral ear.

The aim of this study is evaluating the anatomical and functional changes in contralateral ear with unilateral chronic suppurative otitis media.

2. Material and method

This is a prospective study of 100 patient, complaining of unilateral ear discharge for more than 3 months and attending the ENT OPD. The study was conducted for a period from October 2022 to April 2023 in a tertiary care hospital of central india. Ethical committee clearance and patient consent was taken for the study.

All patients underwent detailed history and complete ENT examination was done to rule out other source of infection. Each patient was subjected to the following procedures like blood investigations like complete hemogram, pure tone audiometry, impedance audiometry, otoendoscopy, diagnostic nasal endoscopy and plain X-ray Bilateral mastoid Schuller's view and HRCT temporal bone done if needed.

Inclusion criteria

All unilateral CSOM patient between 12 to 50 years with complaint of ear discharge and reduced hearing.

Exclusion criteria

- (1)Age of patients less than 12 year and more than 50 years.
- (2)Patients with bilateral ear discharge.
- (3)Patients with previous history of ear discharge, head trauma, ototoxicity, noise induced hearing loss and pregnancy.

3. Result

Sex distribution -

The study comprised of 100 patients in which 27 patients (27%) were male and 73 patients (73%) were female

Table 1: Sex distribution of patients

	Number	Percentage
Male	27	27%
Female	73	73%
Total	100	100%

Age distribution –

Out of 100 patient, 16 patient were in between 12-20years (16%), 36 patients were in between 21-30 years (36%), 26 patients were in between 31-40 years (26%) and 22 patients were in between 41-50 years (24%).

Table 2: Age wise distribution of patients

Age group	Number of patients	Percentage
12- 20 year	16	16%
21- 30 year	36	36%
31- 40 year	26	26%
41- 50 year	22	22%
Total	100	100%

Symptom present –

Patients who underwent into study were present with some ear symptoms. Out of 100 patients, 57 patients (57%) present with ear discharge alone , 31 patients (31%) present with ear discharge and reduced hearing while 12 patients (12%) present with ear discharge and tinnitus.

Table 3: Symptoms in which patients present

Symptoms	No of patients	Percentage
Ear discharge	57	57%
Ear discharge + reduced hearing	31	31%
Ear discharge + tinnitus	12	12%
Total	100	100%

Type of disease –

Out of 100 patients 72 patients (72%) present with mucosal type of chronic otitis media and 28 patients (28%) present with squamosal type of chronic otitis media.

Table 4: Type of disease

Type of disease	No of patients	Percentage
Mucosal	72	72%
Squamosal	28	28%
Total	100	100%

Otoendoscopic findings of contralateral ear –

All study patients underwent otoendoscopy of contralateral ear. They present with following finding. we examine the ear with 4 mm diameter otoendoscope.

Table 5: Otoendoscopic findings of contralateral ear

Findings	Percentage
Normal	36%
Retraction of pars tensa	
Grade 1	32%
Grade 2	8%
Grade 3	4%
Grade 4	3%
Retraction of pars flaccida	4%
Tympanosclerosis	9%

Otitis media with effusion	4%
Total	100%

Audiometric finding of contralateral ear –

All of them had conductive hearing loss. Pure tone average hearing loss were compared with contralateral ear and diseased ear as follows-

Table 6: Audiometric finding of contralateral ear

Hearing loss in decibel	Hearing loss	Contralateral ear	Percentage
<25 db	Normal	51	51%
26 – 40 db	Mild	32	32%
41 – 55 db	Moderate	14	14%
56 – 70 db	Moderately severe	3	3%
71 – 90 db	Severe	0	0%
>91 db	Profound	0	0%

Impedance Audiometry findings-

Table 7: Impedance Audiometry findings of Contra Lateral Ear

Type of graph	Number	Percentage
A	45	45%
B	30	30%
As	14	14%
Ad	7	7%
C	4	4%
Total	100	100

4. Discussion

Chronic suppurative otitis media is one of the major health issues that are presenting to ENT OPD at tertiary care centre. It is most commonly seen in lower socioeconomic status people. The disease evolves in a continuum with mild or minimal symptoms, such as simple retractions, it can progress to severe changes, such as retraction pockets and destructive cholesteatoma. Effusion, perforations, and cholesteatoma represent different pathological stages of the same disease. The evolution of this continuum can be seen in the contralateral ear (CLE). When tubal dysfunction is the trigger of COM, then there is a high probability of impairment of both ears, although in different intensity.(4) Contralateral ear is evaluated as normal or abnormal. Abnormal ear is again classified according to their otoscopic findings it may be normal, fluid in the middle ear, tympanosclerosis, retraction of pars tensa and pars flaccid, granulation, atelectasis and healed thin membrane.

Otoendoscopy is the real boon to the otologists. Otoendoscopy is an increasingly used day care procedure in the field of otology. It has several advantages over routine Otoscopy for e.g., better resolution, wider field of vision, and associated with reduced surgical morbidity.

In our study, most common age group which are mainly affected are 21-30 years (36%), while a study performed by Scheibe B et. al. (5), the average age was 26.3 years. The study conducted by Akeem AL, mean age years was 35.4+4 (16-75yrs).(6)

In our study, out of 100 patients, 27 patients (27%) were male and 73 patients (73%) were female while a study conducted by Akeem AL, out of 64 patients 44 were male and 40 were female (6). In a study conducted by Md Ali, out of 100 patient 47% male and 53% female.(7)

In our study, the main presenting symptoms was ear discharge which is found in 57% of patients then 31% of patients presented with ear discharge and reduced hearing while 12% presented with ear discharge and tinnitus. In study conducted by Damghani MA et al, the chief complaint of patients was purulent ear drainage (56%) and hearing impairment (37%), whereas in other studies these factors were disregarded.(8)

In present study mucosal type of chronic otitis media was found in 72% of patients and 28% of patients presents with squamosal type of chronic otitis media on the other hand, not similar but very near result (60% mucosal COM) was found by Prakash et al. (9)

In this study, the incidence of ear problems in the opposite ear which was based on Otoendoscopy, pure tone audiometry and tympanometry was 64% ,49% and 55% respectively. The study conducted by others, the result was 60%.(10) In study conducted by Damghani MA, otoscopy showed, 54% of patients had problem in the contralateral ear (8).

According to the results of Otoendoscopy, 47 patients had retraction of tympanic membrane in that pars tensa, Grade I - 32, Grade II - 8. Grade III -4 and Grade IV- 3 and this feature is suggestive of tubotympanic type of chronic otitis media. The attic retraction was found in only 4 patients (4%) which is suggestive of atto-antral disease. A study conducted by Soni et al, similar result was found.(11) Tympanosclerosis was the second most symptoms found in patients followed by grade I retraction. similar result was found by Soni et al.(11)

In our study, 51% patients had normal hearing in contralateral ear while 32% of patients had mild conductive hearing loss. By means of tympanometry, 45% patients were diagnosed as normal in contralateral ear i.e. type A tympanogram, type B was found in 30% and type C was found in 4% (table 7). In other study by Damghani MA, 38% of patients were diagnosed with a problem in the contralateral ear, out of which 89.5% was type B and 10.5% was type C. (8)

5. Conclusion

Patients with COM in one ear are more likely to develop some degree of disease in the contralateral ear. The results of this study and previous studies show that we should not consider COM as a disease limited to one ear because in many cases the occurrence of this disease can affect both ears. Consequently, the contralateral ear should always be evaluated comprehensively in patients with unilateral COM to efficiently diagnose any alterations and, if necessary, provide timely therapeutic intervention. Evaluation of contralateral ear in unilateral chronic otitis media is crucial as majority of time some hidden pathology is present in opposite ear and otoendoscopy plays a great role in diagnosing these hidden pathologies and helps in subsequent treatment.

6. Bibliography

1. Watkinson J, Clarke R. Scott-Brown's otorhinolaryngology and head and neck surgery: 3 volume set. CRC Press; 2018.

2. Khan MK. A study on status of contralateral ear in unilateral chronic suppurative otitis media. *Int Journal Adv Res Med.* 2020;2(02):136–41.
3. Shireen A, Mubeena MN. Status of contralateral ear in unilateral chronic otitis media. *Int J Otorhinolaryngol Head Neck Surg.* 2017;3:135–9.
4. Silva MNL da, Muller J dos S, Selaimen FA, Oliveira DS, Rosito LPS, Costa SS da. Tomographic evaluation of the contralateral ear in patients with severe chronic otitis media. *Brazilian Journal of Otorhinolaryngology.* 2013;79:475–9.
5. Selaimen da Costa S, Rosito L, Dornelles C, Sperling N. The contralateral ear in chronic otitis media: a series of 500 patients. *Archives of Otolaryngology--head & Neck Surgery.* 2008;134(3):290–3.
6. Lasisi AO, Sulaiman OA, Afolabi OA. Socio-economic status and hearing loss in chronic suppurative otitis media in Nigeria. *Annals of tropical paediatrics.* 2007;27(4):291–6.
7. Islam MS, Islam MR, Bhuiyan MAR, Rashid MS, Datta PG. Pattern and degree of hearing loss in chronic suppurative otitis media. *Bangladesh journal of Otorhinolaryngology.* 2010;16(2):96–105.
8. Damghani MA, Barazin A. Alterations in the contra lateral ear in chronic otitis media. *Iranian journal of otorhinolaryngology.* 2013;25(71):99.
9. Adhikari P, Khanal S, Bhatta R, Sigdel S, Baral D. Status of contralateral ear in patients with chronic otitis media. *Internet J Health.* 2009;20(2):1–6.
10. Payal G, Pranjali K, Gul M, Mittal M, Rai A. Computed tomography in chronic suppurative otitis media: value in surgical planning. *Indian Journal of Otolaryngology and Head & Neck Surgery.* 2012;64:225–9.
11. Soni S, Nath N. Status of contralateral ear in chronic otitis media and role of diagnostic otoendoscopy in it's assessment. *Int J Otorhinolaryngol Head Neck Surg.* 2019;5:650.