

# A Study of Sensorineural Hearing Loss in Patients with Chronic Suppurative Otitis Media

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## Abstract

**Introduction:** Chronic suppurative otitis media (CSOM) is the most infectious disease that leads to hearing loss, mainly conductive type, but some studies have also found sensorineural component in such patients.

**Aims and Objectives:** The aim is to study the incidence of age, sex, nature of discharge, type of perforation in CSOM patients on development of sensorineural hearing loss (SNHL), and to determine the association between CSOM and SNHL.

**Materials and Methods:** The prospective study was carried out on 100 patients presented in Department of ENT, SMHS Hospital, Government Medical College, Srinagar, J and K from January 2018 to December 2018. The patients presented with complaints of recurrent ear discharge.

**Results:** In the present study, the incidence of SNHL was found in 19% of patients. Incidence of SNHL increases with age, that is, 36.84% in patients of age group 51–60 years developed SNHL. SNHL was also found to be predominant in males (51.21%) as compared to females (48.78%). In the present study, purulent ear discharge had more predisposition to develop SNHL.

**Conclusion:** There were relation and association between age, sex, nature of ear discharge, and type of disease in CSOM patients of SNHL.

**Key words:** Chronic suppurative otitis media, Ear discharge, Mixed hearing loss, Sensorineural hearing loss

## INTRODUCTION

Chronic suppurative otitis media (CSOM) is the chronic inflammation of the middle ear fossa with discharge through perforated tympanic membrane.<sup>[1]</sup> CSOM leads to hearing loss. Hearing loss leads to impaired development of language and speech skills in case of children. Hearing loss may also cause poor quality of life in adults.<sup>[2,3]</sup> Chronic otitis media causes permanent perforation of drum membrane. CSOM is of two types: Suppurative otitis media and cholesteatoma.<sup>[4]</sup> It has been found that toxins in CSOM can cause damage to cochlea so it can also cause sensorineural hearing loss.<sup>[5]</sup> Hence, this study was planned to assess clinically the incidence with respect to sex of patient, duration of discharge and disease, and type of

perforation on development of sensorineural hearing loss (SNHL) in CSOM patients.

## MATERIALS AND METHODS

The present study was carried out in outpatient department (OPD) of otorhinolaryngology (ENT) of SMHS Hospital, Government Medical College, Srinagar, J and K. It was a cross-sectional study and was carried out during the study period from January 2018 to December 2018. One hundred patients were selected during study period based on inclusion and exclusion criteria.

### Inclusion Criteria

All CSOM patients with history of recurrent discharge from ear are the main inclusion criteria coming to ENT OPD and patients with tuning fork test, ABC decreased.

### Exclusion Criteria

Patients in whom hearing loss could be attributed to reasons other than CSOM such as patients who are below 12 years

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are excluded to eliminate the possibility of inaccuracy of audiological testing because of non-cooperative attitude of children. Patients with age above 55 years were also excluded from the study because of high incidence of presbycusis in this age group, history of previous otological surgery, familial hearing loss, prolonged exposure to noise, and head trauma were excluded from the study.

**History Taking and Examination**

A proforma of ENT examination was filled for each patient and documented. Consent of all patients was taken for clinical examination and required investigation.

**Special Investigation**

Pure tone audiometry was performed by calibrated audiometer in a sound proof room. Pure tone air threshold (AC) and pure tone bone conduction threshold audiometry were done. The hearing of the patient was assessed by pure tone audiogram, type, and degree of hearing loss recorded.

**OBSERVATION AND RESULTS**

**Age**

In patients of age <20 years, SNHL is prevalent in 5.26%. The incidence of SNHL among patients of age group of 21–30 years was 10.52% whereas it was 15.78% in 31–40 years. However, it was found that the incidence was highest in age group of 41–56 and 51–60 years which was 31.57% and 36.84%, respectively [Table 1].

**Sex**

Among the total number of 100 patients, 50 were males and 50 were females. The incidence of SNHL in females was 44.44% where as in males, it was 55.55% [Table 2].

**Nature of Ear Discharge**

The SNHL in patients with mucoid ear discharge was 17.64%. Among the patients with mucopurulent ear discharge, SNHL was found in 35.29%. In patients with purulent discharge, SNHL was 47.05% [Table 3].

**Type of Disease**

Among 100 patients, in pars flaccida perforation, SNHL was 37.59% and in pars tensa perforation, SNHL was 62.59% [Table 4].

**DISCUSSION**

CSOM is one of the most common otological conditions encountered in ENT OPD. It is one of the major cause of conductive hearing loss.

**Table 1: Age distribution**

Pure tone audiometry	Age group (year)					Total
	<20	21–30	31–40	41–50	51–60	
SNHL (%)	1 (5.26)	2 (10.52)	3 (15.78)	6 (31.57)	7 (36.84)	19 (100)
MHL	4	8	14	25	30	81
Total						100

MHL: Mixed hearing loss, SNHL: Sensorineural hearing loss

**Table 2: Sex distribution**

Pure tone audiometry	Sex		Total
	Male	Female	
SNHL (%)	10 (55.55)	8 (44.44)	18 (100)
MHL (%)	40 (48.78)	42 (51.22)	82 (100)
Total			100

MHL: Mixed hearing loss, SNHL: Sensorineural hearing loss

**Table 3: Nature of discharge**

Pure tone audiometry	Nature of discharge			Total
	Mucoid	Mucopurulent	Purulent	
SNHL (%)	3 (17.64)	6 (35.29)	8 (47.05)	17
MHL	22	36	25	83
Total				100

MHL: Mixed hearing loss, SNHL: Sensorineural hearing loss

**Table 4: Type of disease**

Pure tone audiometry type	Type of disease		Total
	Pars flaccida perforation	Pars tense perforation	
SNHL (%)	6 (37.5)	10 (62.5)	16
MHL	14	70	84
Total			100

MHL: Mixed hearing loss, SNHL: Sensorineural hearing loss

In the present study, the incidence of SNHL in CSOM was highest in age group of 51–60 years (35.29%). There was increase of SNHL with age. In a study conducted by Azevedo *et al.*<sup>[6]</sup> and Vartiainen and Vartiainen,<sup>[7]</sup> there is also increase in incidence of SNHL in CSOM patients with older age.

In the present study, the distribution of SNHL in CSOM patients was 44.44% in females and 55.55% in males. In a study conducted by Mohsin *et al.*,<sup>[8]</sup> it was found that the SNHL was higher in males than females.

In our study, it was found that the purulent ear discharge is more prone to develop SNHL (47.05%) than mucopurulent (35.29%) and mucoid (17.64%). This result was not supported by studies of Levine *et al.*<sup>[9]</sup> and Mohsin *et al.*<sup>[8]</sup>

In the present study, patients with pars flaccida perforation developed less SNHL (37.59%) than patients with pars tensa perforation (62.59%). The results were supported by MacAndie and O'Reilly.<sup>[10]</sup>

## CONCLUSION

There was increase in incidence of SNHL in CSOM patients. The risk of disease is more in patients with increasing age and the longer duration of disease. Early detection and management can limit SNHL in these patients. The risk of SNHL is more in patients with active stage disease with chronic otorrhea more in males. Hence, we can conclude that there is an association between CSOM and SNHL. Our study was done on small group of population so for better understanding the study should be carried out in large group of population.

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