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A Prospective Study of Prevalence of Sensorineural Hearing Loss in CSOM with or Without Cholesteatoma in Medical College, Kolkata.

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Abstract
Introduction: *CSOM is a common cause for hearing loss in developing countries, usually people present with mixed hearing loss of which sensorineural component needs to be investigated, some of the reasons for CSOM are poor hygiene, poor nutrition, pathologic bacteria, septic focus from nasopharynx and oropharynx. Usually round window membrane is not permeable, during chronic inflammation it becomes permeable and penetration of toxins from middle ear to inner ear which leads to sensorineural damage.*
Materials and Methods: *A prospective observational study of 100 cases of CSOM were included in the study for convenience for a period of 2 years. All patients were subjected to otomicroscopic examination and the type of CSOM is assessed (Tubotympanic or Atticoantral). All patients were subjected to Pure Tone Audiometry.*
Results: *In the present study 100 patients of CSOM were taken, out of which 30 patients had sensorineural component and 70 patients do not have sensorineural component. Out of 30 patients with sensorineural component, 16 were Males and 14 were Females. Similarly, 17 had disease in the left ear and 13 in the right ear. Patients with duration of disease for 16 - 20 years correspondingly, sensorineural component is more in the group (13) which is 43.34%.*
Conclusion: *CSOM patients develop sensorineural component if the disease is not treated at the earliest, longer the duration stronger is the chance for getting the sensorineural component.*
Key Words: *CSOM, nasopharynx and oropharynx*

I. Introduction

CSOM is a common cause for hearing loss in developing countries, usually people present with mixed hearing loss of which sensorineural component needs to be investigated, some of the reasons for CSOM are poor hygiene, poor nutrition, pathologic bacteria, septic focus from nasopharynx and oropharynx.[1] Usually round window membrane is not permeable, during chronic inflammation it becomes permeable and penetration of toxins from middle ear to inner ear which leads to sensorineural damage.[2]

Hearing loss is one of the commonest complaints in chronic otitis media that can be prevented if detected early. Various studies have shown the prevalence of chronic otitis media in India to be 2-15%.[3] It is seen that about 13.8-36.2% of people with COM have hearing loss. Alexandre et al conducted a retrospective study where the incidence of SNHL in patients of chronic otitis media was 13%.[4,5] The prevalence of sensorineural hearing loss was found to be 7.93% in mucosal and 11.58% in squamosal type of chronic otitis media.

II. Materials And Methods

A prospective observational study of 100 cases of CSOM were included in the study for convenience for a period of 2 years. This study was conducted from January 2018 to January 2020 in Mursidabad Medical College and Hospital, Berhampore.

Inclusion Criteria

- Patients should have CSOM for more than 5 years.
- Age from 15 - 45 years.

Exclusion Criteria

- Systemic problems (DM, HT, Hypothyroidism).
- Presbycusis, Ototoxicity.
- Meniere's disease.

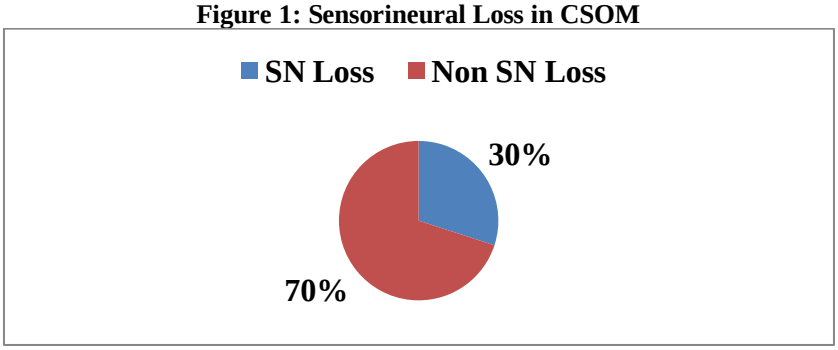
- Sudden sensorineural loss.
- Complications of CSOM. These were excluded with detailed history taking, clinical examination and audiometry.

All patients were subjected to otomicroscopic examination and the type of CSOM is assessed (Tubotympanic or Atticoantral). All patients were subjected to Pure Tone Audiometry.

III. Results

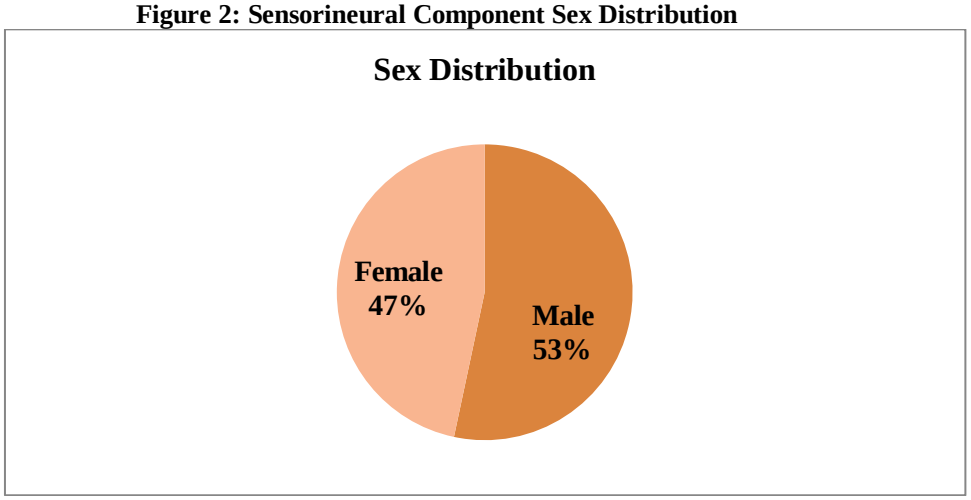
Out of 100 cases of CSOM about 30 patients presented with sensorineural component and 70 patients does not have sensorineural component.

Figure 1: Sensorineural Loss in CSOM



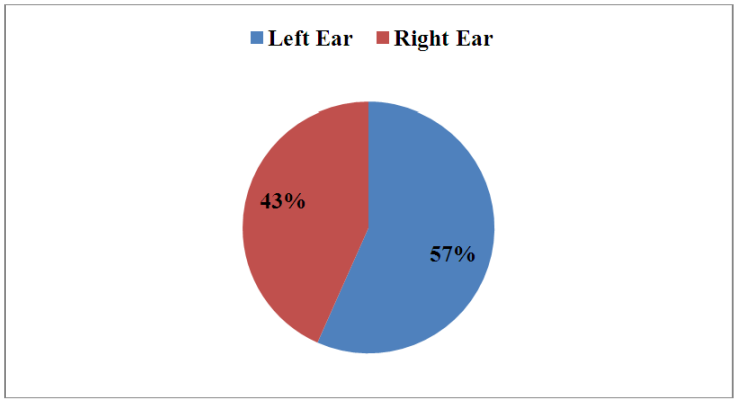
Out of 30 patients with sensorineural component in CSOM, 16 patients i.e. (53.33) were male and 14 patients i.e. (46.67) were female.

Figure 2: Sensorineural Component Sex Distribution



Out of 30 patients with CSOM with sensorineural component, 17 patients had disease in the left ear (i.e.) 56.67%, while 13 patients in right ear (i.e.) 43.33%.

Figure 3: Sensorineural Component Side Distribution



Out of 30 patients with sensorineural component in CSOM, duration of disease was studied and tabulated in which maximum number of patients had disease for 16 - 20 years correspondingly. SN component is more in this group.

Duration of Disease	No. of Patients	Prevalence of SN Loss in %
5 - 10 yrs.	5	16.66
11 - 15 yrs.	8	26.67
16 - 20 yrs.	13	43.34
> 20 yrs.	4	13.33

Out of 30 patients with sensorineural component and CSOM, 17 patients had tubotympanic disease and 13 patients had atticoantral disease. Out of 30 patients of CSOM with sensorineural component more patients were in the age group between 31-40, about 14 patients (i.e.) 46.67%. There were 4 patients in the age group between 11-20 yrs. (i.e.) 13.33%; between 21-30 yrs. there were 8 patients (i.e.) 26.67% and more than 41 yrs. there were 4 patients (i.e.) 13.33%.

Age Group	No. of Patients	Percentage
11 - 20	4	13.33
21 - 30	8	26.67
31 - 40	14	46.67
> 41	4	13.33

IV. Discussion

In our study, 30% patients i.e. (30 out of 100) of CSOM had sensorineural component. In a study conducted by Kamaljit Kaur et al (2003), the total number of patients with sensorineural component was 24% and Levine (1989) was 37.2%.[6]

In our study overall age distribution was from 15 to 45 yrs., majority of patients with sensorineural component were between 31 - 40 yrs. There were 14 patients (46.67%), mean age 32. According to Ahmed Raquib et al (2009) mean age was 31.1 and Kirtane et al (1985) mean age was 24.[7]

In our study 13 patients who had CSOM for 16 to 20 yrs. had sensorineural component, while shows longer the duration stronger is the tendency to develop sensorineural component. Kirtane MV et al (1985) studies show long-standing otorrhoea, higher is the incidence for sensorineural component.[8]

In our study out of 30 patients of CSOM with sensorineural component, 17 patients were of tubotympanic type and 13 patients were atticoantral type according to Vartiainen (1987), Levine (1989) and Cusimano (1989) shows increase is seen in atticoantral type.[9]

According to Vartiainen (1987) study of 873 chronically infected cases showed high frequency hearing loss, more prevalent in chronic cases. Similarly, Huang et al (1990) studied the potential cytotoxic effects of two inflammatory mediators, endotoxin and free radicals concluded that inflammatory mediators are cytotoxic to hair cells.[10]

V. Conclusion

Chronic Suppurative Otitis Media patients develop sensorineural component if the disease is not treated at the earliest, longer the duration stronger is the chance for getting the sensorineural component. Usually, the inflammatory mediators pass through the round window membrane and cause damage to hair cells. So, treat the condition earlier and prevent irreparable hearing loss.

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