ORIGINAL ARTICLE

Frequency of Sensorineural Hearing Loss In Chronic Suppurative Otitis Media

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ABSTRACT

Background: CSOM is incessant inflammation ofmesotympanum,hypotympanum,epityppanum and mastoid cells , clinically presented with hearing loss and aural discharge .Deafness in adults and children has its own repurcussionson both in individuals and on surrounding community .Rural population is mostly effected by CSOM .It is one of the most common cause of deafness . Usually in CSOM the type of Deafness is conductive which may be due to the perforation of tympanic membrane, ossicular damage or fixation due to long term inflammation.
Aim: To determination of frequency of SNHL in CSOM
Study design: Cross-sectionalstudy .
Settings: ENT department Shaikh Zayed Hospital Lahore .
Duration with date: From Nov 01, 2017 to May 22, 2018
Methods: The sample size of 180 was estimated by using 95% confidence leveland 5% margin of error with expected frequency of sensorineural hearing loss 13%[6] among cases with chronicsuppurative otitis media**.**
Results : The age range was 10 to 50 years for both male and female.The male patient were 114 (63.3%) and 66 (36.7%) patient were female .Out of these patients 137 (76.1%) have tubotympanic CSOM and 43 (23.95%) have atticoantral CSOM.23 (12.8%) patients have sensorineural hearing loss and 157(87.2%) patients do not have sensorineural hearing loss.Out of 180 patients 99(55%) have moderate hearing loss on pure tone audiometry.
Conclusions: It is concluded from the study that majority of patient with CSOM have tubotympanic type and while a less percentage of patients have atticoantral type .Males are effected more than males .The incidence of sensorineural hearing loss (12.8%) in CSOM is much lower than the conductive hearing loss.
Keywords: Chronic suppurative otitis media ,sensorineural hearing loss, pure tone audiometry .

INTRODUCTION

CSOM is incessant inflammation of mesotympanum, hypotympanum, epitympanum and mastoid cells , clinically presented with hearing loss and aural discharge. It may be slow in onset but can lead to severe damage and unresolving sequelae . Deafness caused by chronic suppurative otitis media is a global problem, in young children due to its prolonged effects on development of necessary skills in speech,language and social communication. Deafness in adults has also its repurcussions on the individual and surrounding community Rural population is mostly effected by this disease in this country[1].

CSOM affects approximately 2% of the population[2]. WHO in 2004 mentioned worldwide prevalence of CSOM in 65-330 million people and 39-200 million suffer from significant hearing disability[1].

Chronic suppurative otitis media remains the most common cause of hearing impairment[3]. Usually in CSOM the type of Deafness is conductive which may be due to the perforation of tympanic membrane ,ossicular damage or fixation due to long term inflammation[4]. There are two types of CSOM, Tubotympanic and atticoantral type Tubotympanic is safer type; it effects antroinferior part of middle ear and it involves central perforation. It does not cause severe complications usually .Atticoantral is called danaerous type;it involves posterosuperior part of the middle ear which includes attic,antrum and mastoid and involves an attic or amarginal perforation.Riskofsevere complications is larger in this formVasodilation and vasoconstriction of the mucosal vessels of round window areaproduce circulatory disturbances and can lead to disturbances in inner ear[5]. This inflammatory process causes release of toxins which may cross the membrane of round window membrane leading to irreversible loss of the cochlear hair cells mostly of basal turn,which may lead to sensorineural hearing loss[6].

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R Sharma and VK Sharma et al in a study reported that in Chronic suppurative otitis media frequency ofsensorineural hearing loss is 13%[6]. Kamaljit Kaur et al (2003) in their study reported 24% incidence of sensorineural hearing loss in patients with chronic suppurative otitis media. The relationship between chronic suppurative otitis media andsensorineural hearing loss remains a controversial issue[8].

It is likely that SNHL in CSOM effects mostly people belonging to lower socioeconomic status due to difficulty to provision and access to treatment ,poor hygiene,lack of education and inadequate follow up[6].

Sensorineural hearing loss due chronic otitis media has been reported as a definite pathologic entity, but its prevalence remains controversial.[7]In patients having chronic suppurative otitis media higher frequencies were more effected than the lower frequencies, however the age and duration of ear discharge doesnot seem to have any relation with the degree of sensorineural hearing loss[8]. In a study it was found that 34.56% of school children had different grades of hearing impairment and 16.95% having chronic suppurative otitis media had mild to moderate hearing loss (41-60 dB).

The rationale of my study is determination of frequency of sensorineural hearing loss in CSOM whether it is present or not as it is still controversial in previous literature as shown by the above mentioned studies by R Sharma,VK Sharma and Kamaljit Kaur.

The objective of the study was to determine the frequency of SNHL in CSOM.

OPERATIONAL DEFINITIONS:

Chronic Suppurative Otitis Media: It is incessant inflammation of themesotympanum,hypotympanum,epitympanum and mastoid cells, clinically leading to otorhea through a persistent perforation in tympanic membrane and is diagnosed by otoscopy and microscopy .

Sensorineural Hearing Loss: Type of deafness in which the root cause lies in vestibulocochlear nerve, inner ear or central processing centers of brain ,it is measured in dB and by pure tone audiometric testing as Hearing loss of more than 16 dB and is presented graphically on pure tone audiogram .

MATERIALS AND METHODS

This cross-sectional study was conducted in ENT Department Shaikh Zayed Hospital, Lahore fro November1, 2017 to May 22, 2018. The sample size of 180 was estimated by using 95% confidence level and 5% margin of error with expected frequency of sensorineural hearing loss 13%[6] among cases with chronic suppurative otitis media**.**

Non probability purposive sampling technique was used.

Inclusion Criteria:

Male & female 10 to 50 years with continuous eardischarge through a defect in tympanic membrane for at least three months

Exclusion Criteria:

1. Traumatic head injury assessed by history.
2. Meningitis assessed by CSF examination .
3. Previous ear surgery assessed by history .
4. Chronic noise exposure assessed by history .(working in a factory /commercial drivers).
5. Systemic ototoxic drug therapy assessed by history .

Data collection and procedure: 180 patients fulfilling the inclusion criteria were enrolled after informed consent through the OPD and indoor of ENT department Shaikh Zaid Hospital, FPGMI, Lahore.Demographic history like name ,age ,gender and address will be recorded . All patients with chronic suppurative otitis media were examined by pure tone audiometric testing. All this information was collected by Performa (attached). Pure tone audiometry was standardized and performed by one audiologist. Patients included in this study did not suffer any extra financial burden as we routinely perform pure tone audiometry in every patient who presents with chronic suppurative otitis media. Sensorineural hearing loss waslabelled

Data analysis: All the data was entered and analyzed by using SPSS Version 10. Descriptive statistics were calculated. Qualitative variables like Gender andfrequency of sensorineural hearing loss in chronic suppurative otitis media were presented by using percentages and frequency.Quantitative variable like age of the patient were presented by mean and standard deviation .Data was stratified for age and gender ,type of CSOM .Chi square test will be used post- stratification with P –value less than or equal to 0.05 considered as significant .

RESULTS

The age range was 10 to 50 years for both male and female with a mean of 33.16 and standard deviation of 10.7. The male patient were 114 (63.3%) and 66 (36.7%) patient were female. Out of the total 180 Patients 11 (6.1%) had Slight, 29 (16.1%) Mild, 99 (55%) Moderate, 17 (9.4%) Moderately Severe, 12(6.7%) severe and 12(6.7) Profounf degree of hearing loss. 23(12.8%) patients have sensorineural hearing loss and 157(87.2%) patients do not have sensorineural hearing loss. Out of these patients 137(76.1%) have tubotympanic CSOM and 43(23.95%) have atticoantral CSOM. 23 Patients with Tubotympanis CSOM had sensorineural hearing loss with ***P Value*** of 0.004. Sensorineural hearing loss was not age specific as statistical analysis gave ***P Value*** of 0.023. Sensorineural hearing loss was more in patients (23) with Moderate degree of hearing loss with ***P Value*** of 0.001.

Table 1: Frequency of patients According to Sex (n=180)

	Frequency	Percent
Male	114	63.3
Female	66	36.7
Total (n)	180	100.0

Table 2: Frequency of Degree of Hearing Loss (n=180)

	Frequency	Percent
Slight	11	6.1
Mild	29	16.1
Moderate	99	55.0
Moderately Severe	17	9.4
Severe	12	6.7
Profound	12	6.7

Table 3: Descriptive Statistics of Age (n = 180)

Mean	33.16
Std. Deviation	10.697
Range	35
Minimum	14
Maximum	49

Table 4: Frequency of Sensorineural Loss (n=180)

	Frequency	Percent
Yes	23	12.8
No	157	87.2
Total (n)	180	100.0

Table 5: Frequency of Type Of CSOM (n=180)

	Frequency	Percent
Tubotympanic	137	76.1
Atticontral	43	23.9
Total (n)	180	100.0

Table 7 Cross Table of Sensorineural Loss and Type Of CSOM (n=180)

Sensorineural Loss	Type Of CSOM		Total
	Tubotympanic	Atticontral	
Yes	23	0	23
No	114	43	157
Total	137	43	180

P value: .004

Table 8 Cross Table of Sensorineural Loss in Age Groups(n=180)

Age groups (Yrs)	Sensorineural loss		Total
	Yes	No	
10-19	2	26	28
20-29	12	35	47
30-39	3	40	43
40-49	6	56	62
Total	23	157	180

P value: .023

Table 9: Sensorineural Loss according to Degree of Hearing Loss(n=180)

Degree of hearing	Sensorineural loss		Total
	Yes	No	
Slight	0	11	11
Mild	0	29	29
Moderate	23	76	99
Moderately Severe	0	17	17
Severe	0	12	12
Profound	0	12	12
Total	23	157	180

P value: .001

Table 10Sensorineural Loss according to Gender (n=180)

Gender	Sensorineural loss		Total
	Yes	No	
Male	23	91	114
Female	0	66	66
Total	23	157	180

P value:0.001

DISCUSSION

Chronic suppurative otitis media is more common in males than females .Majority of the patient with chronic suppurative otitis media have conductive hearing loss but less percentage of patients have sensorineural hearing loss .Majority of patients have tubotymapnic type of CSOM (76.1%) rather than atticoantral type of CSOM (23.9%) .Sensorineural hearing loss was present in 12.8% of patients and was absent in 87.2 % patients.Patients having tubotympanic type of CSOM has mild to moderate hearing loss while patients having atticoantral type of CSOM have severe to profound hearing loss in majority of cases .Lower socioeconomic status also effects the outcome of sensorineural hearing loss in CSOM as incidence increases in patients with low socioeconomic status.In patients having chronic suppurative otitis media higher frequencies are effected more than the lower frequencies.Majority of patients with CSOM had moderate hearing loss .

In this study I included 180 patients with diagnosed chronic suppurative otitis media ,137(76.1%) patients had tubotympanic type of CSOM and 43 (23.9%) had atticoantral type of CSOM .The age distribution was 10 to 50 years.Male patients were 114(63.3%) and female patients were 66(36.7%).out of 180 patients with CSOM 23(12.8%) patients had sensorineural hearing loss while 157(87.2%) patients did not have sensorineural hearing loss.11(6.1 %) patients had slight hearing loss, 29(16.1%) patients had mild hearing loss,99 (55%) patients had moderate hearing loss,17(9.4%) had moderately severe hearing loss,12(6.7%) had severe hearing loss and 12(6.7%) had profound hearing loss .

CONCLUSIONS

It is concluded from the study that majority of patient with CSOM have tubotympanic type and while a less percentage of patients have atticoantral type .Males are effected more than males .The incidence of sensorineural hearin loss (12.8%) in CSOM is much lower than the conductive hearing loss.Lower socioeconomic status increases the incidence of sensorineural hearing loss in CSOM.

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