

SENSORINEURAL HEARING LOSS IN CHRONIC OTITIS MEDIA: A CROSS SECTIONAL DESCRIPTIVE STUDY AT TERTIARY CARE HOSPITAL

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ABSTRACT

Objective: To find the prevalence of sensorineural hearing loss (SNHL) in chronic otitis media (COM).

Material and Methods: Study was done at Otorhinolaryngology-B unit of Hayatabad Medical Complex (HMC), Peshawar, from March 2016 to September 2016. It was a cross sectional descriptive study in which a total of 174 patients were included by using 5% error margin and 95% confidence interval with expected frequency of SNHL 13% in cases with COM using WHO formula for sample size.

Results: In our study mean age was 26 years with standard deviation \pm 11.62. Male and female patients were 45% and 55% respectively. The prevalence of SNHL was found to be 18% in patients with COM.

Conclusion: Eighteen percent patients had SNHL associated with COM.

Keywords: Bacteriology, antibiotic sensitivity, chronic otitis media, SNHL.

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INTRODUCTION

Chronic otitis media (COM) is inflammation of mastoid air cells and/ or middle ear, clinically present as ear discharge and decrease hearing.¹ Approximately 2% of the population is affected by COM.² In 2004 worldwide prevalence of COM mentioned by WHO in 65-330 million people and 39-200 million suffered from significant clinical hearing impairment.¹

The most common cause of hearing impairment is still COM.³ The hearing loss is due to chronic inflammatory process which is mostly conductive as a result of tympanic membrane perforation and/ or ossicular chain fixation or erosion.⁴ Recent studies have shown that the disease also affects inner ear and patients may have sensorineural deafness as well.¹⁵ Some circulatory disturbance is produced by chronic inflammatory process i.e.

vasodilation and vasoconstriction of vessels of mucosa in the round window membrane which affects the inner ear.⁵ Irreversible cochlear hair cell loss is caused by toxins that cross round window membrane and effects the cochlear basal turn.⁶ SNHL due to COM is documented as a definitive pathologic entity, but the incidence remain debatable.⁷ Patients having COM, lower frequencies were less effected as compared to higher ones, but period of ear discharge and age, seems not to be related with the degree of hearing loss (HL).^{8,16} In one study, it was found that, 34.56% of school going children had different grades of hearing impairment and 16.95% with COM had mild to moderate HL (41-60 dB).¹ Kamaljit Kaur et al¹⁷ in a study reported 24% prevalence of SNHL in COM. The relationship between COM and SNHL remains a debatable issue.⁸ The rational of our study is to find the prevalence of SNHL in COM because it is a common problem and mostly patients are young. If diagnosed early and treated promptly, gives good results in terms of eradicating the problem, minimizing risks of hearing handicap. If missed in such patients, can lead to deafness.

MATERIAL AND METHODS

A cross-sectional descriptive study was conducted at otorhinolaryngology, Head and Neck Surgery unit

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of HMC, Peshawar for a period of 6 months, from March 2016 to Sep 2016. Sample size was 174 and sampling technique was non-probability consecutive sampling. Patients with ear discharge and perforated tympanic membrane for at least 12 weeks either persistent or intermittent along with hearing loss of both genders were included. Age range was 18 to 50 years. Patients with history of head injury, meningitis, previous ear surgery, chronic noise exposure, systemic ototoxic drug therapy and other causes of SNHL were all excluded. The patients satisfying the inclusion criteria were included after informed consent through the outpatient and indoor. All patients with chronic otitis media having hearing loss was examined by tuning fork tests and pure tone audiometric testing.

RESULTS

A total of 174 patients were observed to determine the frequency of SNHL in COM. Eighty-seven (50%) patients were <20 years, 52 (30%) were in age ranged 21-30 years, 26(15%) in age ranged 31-40 years, 9 (5%) 41-50 years. Mean-age was 26 years, with SD ±11.62. (Table 1) Seventy-eight (45%) patients were male while 96 (55%) were female. (Table 2)

One hundred and eight (62%) patients had chronic otitis media from 3-8 months while 66 (38%) had it from 9-12 month. Mean duration of symptoms was 5 months with SD ± 1.58. (Table 3) SNHL was analyzed as 31 (18%) patients had it while 143 (82%) didn't have SNHL. (Table 4) Stratification of sensorineural hearing loss with age and gender is given in table 5,6

Table 1: Age Distribution (n=174)

Age	Frequency	Percentage
<20 years	87	50%
21-30 years	52	30%
31-40 years	26	15%
41- 50 years	9	5%
Total	174	100%

Mean age was 26 years with standard deviation ± 11.62

Table 2: Gender Distribution (n=174)

Gender	Frequency	Percentage
Male	78	45%
Female	96	55%
Total	174	100%

Table 3: Duration of Symptoms (n=174)

Duration	Frequency	Percentage
3-8 month	108	62%
9-12 month	66	38%
Total	174	100%

Mean age was 5 weeks with standard deviation ± 1.58

Table 4: Sensorineural Hearing Loss (n=174)

SHL	Frequency	Percentage
Yes	31	18%
No	143	82%
Total	174	100%

Table 5: Stratification of Sensorineural Hearing Loss with Age (n=174)

SHL	<20 years	21-30 years	40-31 years	50-41 years	Total
Yes	15	9	5	2	31
No	72	43	21	7	143
Total	87	52	26	9	174

Chi Square test was applied in which P value was 0.997

Table 6: Stratification of Sensorineural Hearing Loss with Gender (n=174)

SHL	Male	Female	Total
Yes	14	17	31
No	64	79	143
Total	78	96	174

Chi Square test was applied in which P value was 0.874

DISCUSSION

Chronic otitis media is a serious healthcare problem throughout the world. It causes distress to the patient and their family and puts economic burden on the health care system. According to previous publications race and socio-economic factors are responsible for the incidence of this disease and is reported mostly in Eskimos, Australian aboriginal children, American Indians, and among black South Africans¹³. In developing countries, poor living conditions, poor hygiene, nutrition and overcrowding have been considered as basis for the widespread incidence of COM. It was noted that pediatric age group has high occurrence of the disease which constituted more than 50% participants. Male to female ratio is approximately equal i.e. 1.2 :1.0, similar to other studies done in same region, these findings shows that it is not related to age and no propensity of disease towards gender¹⁶.

Chronic otitis media (COM) affects approximately 2% of population.² In 2004, WHO mentioned worldwide prevalence of COM as 65 to 330 million people and 39 to 200 million suffer from significant clinical hearing impairment.¹ Chronic otitis media is still the most common cause of hearing loss.³ The hearing loss is commonly due to tympanic membrane perforation and/ or ossicular chain erosion or fixation caused by chronic inflammation.⁴ Our study demonstrate that mean age was 26 years with standard deviation ± 11.62. Male and female patients were 45% and 55% respectively. The prevalence of SNHL was found to be 18% in patients with COM. Similar results were found in another study done by Yasir Et al in which COM frequency of SNHL is 13% (P<0.05).⁶ It is likely that SNHL

associated with COM is highly prevalent in lower socioeconomic status. This can be corroborated by the hypothesis that there is difficulty to afford and access treatment, follow up issues, poor hygiene and education in low socioeconomic group.⁶ Kolo ES et al stated that higher frequencies were more effected in patients with COM who had a significant degree of SNHL¹⁶. In patients with COM higher frequencies were more effected than the lower ones, but the patient's age and duration of otorrhea has no correlation with the degree of SNHL.⁸ A study demonstrated that 34.56% of school going children had different grades of hearing impairment and 16.95% had COM, who had mild to moderate degree hearing loss (41-60 dB).¹ Kamaljit Kaur et al in a study reported 24% prevalence of SNHL in patients with COM¹⁷. Amin Amali and colleagues in a study demonstrated that COM is related to some degree of SNHL and cochlear damage¹⁵, which is similar to findings of current study.

CONCLUSION

The study concluded that 18% of patients with chronic otitis media had sensorineural hearing loss.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

- Ali S:** Main idea, Data collection, Manuscript
Junaid M: Writing of manuscript, Proofreading
Khan AR: Data analysis, Proof reading
Khan AA: Manuscript writeup
Muhammad N: Bibliography
Khan A: Supervision, Proof reading

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.