

A Clinico-Epidemiological Profile of Hearing Loss in Patients Attending a Tertiary Level Hospital in India.

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ABSTRACT

Background: Hearing loss is a common chronic impairment, particularly for older adults. World Health Organization estimates that hearing loss affects 538 million people worldwide. This study was conducted to understand the clinico-epidemiological profile of hearing loss. **Methods:** After approval of the ethics committee, we enrolled patients from our outpatient clinic that presented with complaints of hearing loss. We collected socio-demographic information of the patient. All patients underwent general and systemic examination to ascertain the etio-pathological cause of their hearing loss. The data was analysed using appropriate statistical methods. **Results:** During the study period, 100 patients were enrolled, of which 57 were males, 62 had conductive, 33 had sensorineural and 5 had mixed hearing loss. Majority of the patients had both the ears involved. Majority of the patients belonged to 31-40 years age group (n=23). Chronic suppurative otitis media safe was the most common cause of conductive hearing loss (n=34) and sensorineural hearing loss was mostly caused by congenital causes (n=16). Eustachian tube was blocked in 22 patients with conductive hearing loss and 10 patients with sensorineural hearing loss. **Conclusion:** We studied the various causes of hearing loss in the patient population presenting to our hospital. Further research is required to understand audiometric analysis of these causes.

Keywords: Hearing Loss, Tertiary Centre.

INTRODUCTION

Those who are deaf cannot express themselves because of lack of ability to speak. That is why "Hearing is one of the special senses by which human life is blessed." The sense of hearing enables to establish contact with his fellow being through language. It makes man a social being. Through the hearing man can learn to speak and express himself.

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Only a person with good hearing can develop skill of language, to comprehend and produce articulated speech. Thus deaf is unable to express himself. Hearing loss is a common chronic impairment, particularly for older adults. In the Beaver Dam cohort in the United States, the prevalence of hearing loss, defined by audiometry, increased steadily with age.^[1] Worldwide, estimates from the World Health Organization are that hearing loss affects 538 million people.^[2] A number of abnormalities may lead to hearing loss of each type.

Evaluation of hearing is a highly specialized area and challenging problem of clinical audiology,

which has fascinated otologist right from beginning. It is useful to begin the evaluation by classifying the loss as sensorineural or conductive, since this helps focus the remainder of the patient assessment. Conductive hearing loss is usually related to abnormalities of the outer or middle ear; sensorineural hearing loss is related to inner ear pathology. Through this study we aimed to study the incidence, age and sex distribution of hearing loss, as well as to study the etiopathological causes of hearing loss in our patient population.

MATERIALS AND METHODS

The present study was carried out in the department of Otorhinolaryngology and Head-Neck Surgery of N.S.C.B. Medical College and Hospital, Jabalpur during a period of August 2012 to August 2013 after obtaining approval of the institutional ethics committee.

Selection of cases

The cases for this study were patients of all age group, both sexes, different religions, varying socioeconomic status, who all attended (OPD / in patient) Department of ENT of N.S.C.B. Medical College, Jabalpur. The following equipment were used during the study: bull's eye lamp, head mirror, ear speculums, tuning forks of 256, 512, 1024 Htz,

Jobson Horn's Probe, Otoscope, suction apparatus, pure tone audiometer, ear cleaning swab stick and sterilized cotton, boric spirit and rectified spirit, tongue depressor, laryngeal mirrors of various size, eustachian catheter, gloves, post nasal mirror, Barany noise box, warm water, autoclaved test tube, 4% Xylocaine, Siegel's speculum, nasal speculums and wax curette.

Method of examination and data collection

The standard procedure of examination of ear, nose and throat was carried out in outpatient department and ENT ward of the hospital. Detailed history of the patient was taken as under the various headings mentioned in the proforma. Past history, personal history, family history and other relevant history was taken. General examination included the patients general constitution and carried out according to the various heads mentioned in the proforma. Systemic Examination: included examination of various systems of body. Local examination included the detailed examination of ear, nose and throat as under the proforma. For pathological examination the following investigations were carried out mainly, aural swab (Culture & Sensitivity), throat Swab (Culture & Sensitivity), Blood Sugar, Blood Urea, Urine (Routine & microscopy), Haemoglobin, total leucocyte count, erythrocyte sedimentation rate and coagulation profile. To know the hearing status of patient whisper test and tuning fork test were carried out. In the tuning fork test Rinne test was done with 256, 512, 1024 Hertz. Weber test was done with 512 Hertz to know the side of more damaged conductive mechanism. Absolute bone conduction was done to know the state of inner ear (512 Hertz), Gelle's test was done, as and when required.

Data analysis

Data obtained from hospitals was codified and entered into Microsoft excel sheets. Data were then analyzed using the Statistical Package for Social Sciences (SPSS) version 21. From the software we calculated the age and gender distribution, then were able to categorise cases into conductive and sensorineural hearing loss, and calculate frequencies of those cases.

RESULTS

The present study was on etiopathogenesis of hearing loss in ear diseases. This study was conducted from August 2012 to August 2013 in Department of Otorhinolaryngology and Head-Neck Surgery of NSCB Medical College, Jabalpur. Patients were both, inpatients admitted to E.N.T. ward and those who attended ENT O.P.D. These patients were of different community and of different age groups and sex. The total numbers of cases were 100. These cases were subjected to routine and special investigations available in the institution, wherever indicated, These cases are

tabulated here as regard to their incidence, sex distribution age of presentation and hearing loss in various ear diseases. The majority of cases i.e. 62% had conductive hearing loss while 33% had sensorineural hearing loss. [Table 1] 5% cases had mixed hearing loss. The maximum number of cases of conductive hearing loss were of 31 – 40 age group (35%), followed by 21 – 30 age group (24%). No cases were seen of above 60 year of age and the maximum numbers of cases were in age group of 11 – 20 & 0 -10 years of age. 27% of cases were of above 60 years of age. 5 cases were of mixed hearing loss out of which 3 were of 51 – 60 years of age & 1 each were in age groups 31 – 40 & 41 – 50 years. The majority of cases of conductive hearing loss were of chronic suppurative otitis media safe i.e. 55%, followed by cases of chronic suppurative otitis media (CSOM) unsafe (29%). [Table 2] The majority of cases of sensorineural hearing loss were due to congenital causes (49%), followed by presbycusis (30%). About 9% cases of S.N.H.L. were due to CSOM unsafe.

Table 1: Characteristics of subjects included in the study.

Total number of patients = 100			
Conductive hearing loss = 62			
Sensorineural hearing loss = 33			
Mixed hearing loss = 5			
Males = 57			
	Conductive hearing loss (n)	Sensorineural hearing loss (n)	Mixed hearing loss (n)
Age distribution (years)			
0-10	4	9	0
11-20	9	10	0
21-30	15	1	0
31-40	22	1	1
41-50	8	1	1
51-60	4	2	3
61-70	0	2	0
71-80	0	5	0
More than 80 years	0	2	0
Ear side involved			
Right ear	20	4	3
Left ear	22	5	2
Both ears	20	24	0

Table 2: Causes of hearing loss in our patients.

Conductive hearing loss		Sensorineural hearing loss	
Causes	n	Causes	n
CSOM safe	34	Congenital	16
CSOM unsafe	18	Presbycusis	10
ASOM	2	CSOM unsafe	
Otosclerosis	3	Otosclerosis	3
Trauma	1	Ototoxic drugs	1
Otitis media effusion	1	Post infective	1
Adhesive otitis media	2	Noise induced	1
Tympanosclerosis	1		
Eustachian tube blockage seen in our patients			
Eustachian tube blockage	22	Eustachian tube blockage	10

CSOM: Chronic suppurative otitis media

ASOM: Acute suppurative otitis media

DISCUSSION

The present study was on etiopathogenesis of hearing loss in ear diseases. These patients were of different community and of different age group and gender. The total numbers of cases were 100. These cases are discussed here as regard to their incidence, gender distribution, age of presentation and type of hearing loss in various ear disease. Among the total 100 cases studied, large majority of cases (62%) had conductive hearing loss while 33% cases had sensorineural hearing loss. Mixed hearing loss was present in 5% cases.

In the present study, among the cases of conductive hearing loss, it was seen that maximum number of cases were from the age group between 31 – 40 years. Next in order was age group of 21-30 years. The lowest incidence was found in age group up to 10 years of age and above 41 years of age. Kumar et al^[3] and Kapur YK^[4] found that 75% of the patients were below the age of 20 years. The preponderance of the disease upto second decade has been attributed to their more exposure to various infections specially upper respiratory tract infection. In present study, the incidence of cases of pure conductive hearing loss below 20 year was 21.5% in contrast to above-mentioned reference. More percentage of cases were among 31 to 40 years of age group, due to their more mobility and to their awareness of problem. Among sensorineural hearing loss cases incidence was more in age group of more than 60 years and less than 20 years as the maximum number of cases in SNHL group were of congenital hearing loss or of presbycusis.

In the present study out of 100 cases, 57 were males and 43 females. The male and female ratio was 1.32: 1. Male and female sex incidence variance was found by other workers due to various causes of hearing loss except otosclerosis. Mishra et al,^[5] had also found the higher incidence in males. The preponderance of the disease in males has been attributed to their exposure to the outdoor activities and early medical advice sought as compared to females. The higher incidence of bilateral involvement was due to more prevalence of chronic suppurative otitis media (which usually affects both ears), congenital causes and presbycusis.^[6] Otosclerosis is also known to affect bilaterally. The same was found in present study. According to Morrison in most cases otosclerosis affects both ears, unilateral otosclerosis occurring in only 25% of all the cases.^[7]

In the present study out of 62 cases of conductive hearing loss, in 40 cases Eustachian tube was patent and it was blocked in 22 cases with mild to moderate and moderate to severe degree of hearing loss respectively. It showed that hearing loss was more in cases with blocked Eustachian tube in comparison to patent Eustachian tube. The Eustachian tube has two main functions : to maintain the middle ear pressure

at atmospheric pressure and to allow the normal secretions of the respiratory type mucosa, with which it and part of the middle ear are lined, to pass on to the nasopharynx.^[8] According to Honjo et al eustachian tube achieves the above two functions during swallowing by the muscular contraction of the levator palati dilating the pharyngeal opening and the tensor palati opening the cartilaginous tube.^[9] It seems reasonable to postulate that the adynamic bony part could be physically blocked by the mucosal edema associated with an upper respiratory tract infection.

CONCLUSION

This research studied the various causes of conductive and sensorineural hearing loss in the patient population which presents to our outpatient clinic. Majority of the cases belonged to older age groups, had conductive hearing loss and had both the ears involved. Most common cause of conductive hearing loss was chronic suppurative otitis media safe and the most common cause of sensorineural hearing loss was congenital causes. This research calls for further research to understand the audiometric analysis of different causes of hearing loss.

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