

A Clinical Study on Hearing Loss in a Tertiary Care Hospital in South India



Medical Science

KEYWORDS : Sensorineural hearing loss, Otosclerosis, Conductive hearing loss, Auditory pathway

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ABSTRACT

Hearing loss indicates an abnormality or change in their hearing acuity. Hearing loss is of three types; Conductive, Sensory neural and Mixed type. In conductive hearing loss, problem lies in the conduction mechanism of the ear starting from the external ear to the foot plate of the stapes. Sensorineural hearing loss indicates the problem is in the cochlea or in the neural system up to the auditory cortex. Mixed type of hearing loss indicates the problem in both the systems. In this study our aim is to find out different causes and types of hearing loss among the patients attending ENT department in a tertiary care hospital. This is a prospective study, conducted over a period of 2 years, from October 2009 to September 2011, in the department of ENT, Alluri Sitarama Raju Academy of Medical Sciences. Patients who were willing for the study on them were selected. Complete history was taken and thorough clinical examination was done along with the relevant investigations to find out the causes and types of hearing loss. In our study we found the following results –

- *Out of the 100 patients selected for study, hearing loss was common in female (53%) than male (47%).*
- *Among the selected patients hearing loss was common in age group 20-40yrs (36%).*
- *The hearing loss is commonly bilateral (64%) than unilateral (36%).*
- *Conductive hearing loss is more common 71% followed by sensorineural hearing loss (23%) then mixed hearing loss (6%).*
- *The commonest cause of conductive hearing loss in this study is CSOM (54.9%)*
- *Sensorineural hearing loss is more common in male compared to female.*
- *The commonest cause of sensorineural hearing loss is presbycusis (78.26%) followed by noise induced hearing loss (7.69%).*
- *Mixed hearing loss is more common in female than male.*
- *The commonest cause of mixed hearing loss is CSOM with presbycusis (50.00%) followed by otosclerosis (33.33%).*

Introduction

Hearing loss, commonly termed as deafness by patients, indicates an abnormality or change in their hearing acuity. There are different types of hearing loss and their causes may be different. Hearing loss is of three types broadly like; Conductive, Sensory neural and Mixed type.

Any disease process which interferes with the conduction of sound from external world to reach cochlea causes conductive hearing loss. Causes may lie in the external ear, tympanic membrane, middle ear, ossicles and their joint.

Sensory neural hearing loss, the name itself suggests that the problem is in the sensory organ of the ear i.e cochlea or in the neural system like VIIIth nerve, central auditory pathway up to the auditory cortex.

In mixed type of hearing loss the problem lies both in the conductive pathway as well as in the sensory organ and the neural connection.

Hearing loss may be non-organic type, where there is no organic lesion. This is either due to malingering or psychogenic. There are different tests available to identify those conditions.

Common causes of conductive hearing loss are problems in the external ear like, wax, foreign body, furuncles, benign and malignant tumors or atresia of the external canal. Common middle ear problems like perforation of the tympanic membrane due to infection or trauma, fluid in the middle ear as in case of acute suppurative otitis media (ASOM), serous otitis media or hemotympanum, tumors of the middle ear (benign or malignant), eustachian tube block causing retraction of tympanic membrane, ossicular chain damage or fixation.

Sensory neural hearing loss may be congenital or acquired. Congenital sensory neural hearing loss presents at birth and is because of anomalies of the cochlea or damage during prenatal and perinatal period. Common causes of sensory neural hearing loss are infection of the labyrinth (labyrinthitis), trauma to labyrinth or VIIIth nerve, Noise induced hearing loss, ototoxicity due to certain drugs, presbycusis, Meniere's disease, tumor like acoustic neuroma, familial hearing loss. Certain generalized disorder also causes sensory neural hearing loss like, diabetes, hypothyroidism, kidney disease, autoimmune disorders, multiple sclerosis etc.

One of the common causes of mixed type of hearing loss is long standing chronic suppurative otitis media (CSOM). Here the sensory loss is because of the bacterial toxin, antibody and antibiotic, which diffuse in to the inner ear through the round window membrane causing damage to the cochlea.

The sensory neural hearing loss may genetic and syndromic. In case of syndromic hearing loss, it affects other body system also.

Aims and objectives

To find out different causes and types of hearing loss among the patients attending ENT department in a tertiary care hospital.

Materials and methods

This is a prospective study, conducted over a period of 2 years, from October 2009 to September 2011, in the department of ENT, Alluri Sitarama Raju Academy of Medical Sciences.

The entire PATIENTS attending ENT out patient department with hearing losses, irrespective of age were considered. Some patients came with some other otological

symptoms like vertigo, tinnitus and ear discharge and on examination and investigation hearing loss was found. They were also included in the study. Complete history including family history, occupational history and drug history was taken. Thorough clinical examination was done along with otoscopy and examination under microscope. Routinely in all cases we did hearing tests like Pure tone audiometry (PTA) and Impedance audiometry. Few cases we did CT scan temporal bone to find out the causes of hearing loss. And 100 PATIENTS were selected for study.

Inclusion criteria –

1. Patients of all age group having hearing loss as main complaint.
2. Patient came with some other ear symptoms and diagnosed to have hearing loss.
3. Patients giving consent for study on them.
4. Patients willing to undergo all types of investigations to diagnose the cause of hearing loss.
5. Patient coming for regular follow up.

Exclusion criteria –

1. Patient not giving consent for study on them.
2. Patient not willing for different investigations prescribed.
3. Patient not coming for regular follow up.

Observations

From October 2009 to September 2011 total number of patients attending ENT out patient department was 34,800. Out of which 5800 were with ear disease ie. 16.66%. Out of these 5800 patients 100 patients with hearing loss were selected for study.

Out of 100 patients, 47 were male (47%) and 53 were female (53%).

Table -1 show the age and sex distribution of all the patients with hearing loss. It shows out of 100 patients 7 were in between age group 0 – 10 years (1 female and 6 male), 25 were between age group 10 – 20 years (16 female and 9 male), 36 were in between age group 20 – 40 years (17 female and 19 male), 18 were in between the age group 40 – 60 years (13 female and 5 male) and 14 were above 60 years (6 female and 8 male).

Table – 1 : Age and Sex distribution of the patients (n=100)

Age in years	Female	Male	Total	Percentage
0-10	1	6	7	7%
10-20	16	9	25	25%
20-40	17	19	36	36%
40-60	13	5	18	18%
>60	6	8	14	14%
Total	53	47	100	100%

On examination it was found that out of 100 patients, 36 were having unilateral hearing loss (36%) and 64 were having bilateral hearing loss (64%).

Table -2 shows that majority or the patients were having conductive hearing loss ie out of 100 patients 71 were having conductive loss (71%), 23 were having sensorineural hearing loss (23%) and 6 patients were having mixed type of hearing loss (6%). Male and female distribution has been shown in the table -2.

Table – 2: Types of hearing loss (n=100)

Types	Female	Male	Total	Percentage
Conductive	41	30	71	71%
Sensorineural	8	15	23	23%
Mixed	4	2	6	6%
Total	53	47	100	100%

Table – 3 shows that out of 71 cases of conductive hearing loss the most common cause is chronic suppurative otitis media (54.9%) where 22 females cases and 17 male cases have been diagnosed followed by ossicular discontinuity (14.28%) where female and male are equally effected (5 each). Ossicular fixation (12.6%) is seen more in female (7 cases) than in male (2 cases). In Serous otitis media (5.6%) females and males are equally affected (2 each). In case of ET blockade (8.4%) also females and males are equally affected. Others include patients with some uncommon problems like foreign body in the ear and mass in the ear which includes 2 patients (4.2%) out of which one is male and one is a female.

Table – 3: Causes of conductive hearing loss (n=71)

Causes	Female	Male	Total	Percentage
C.S.O.M	22	17	39	54.9%
Ossicular fixation	7	2	9	12.6%
Ossicular discontinuity	5	5	10	14.28%
Serous otitis media	2	2	4	5.6%
E.T blockade	3	3	6	8.4%
Others	2	1	3	4.2%

Table – 4 shows that out of 23 cases of sensorineural hearing loss presbycusis (78.26%) is the commonest cause and male (10) are more affected than female (8). Noise (7.69%) induced hearing loss is seen in 2 cases and both are male. 2 cases of deaf mute are seen and both of them are male. Post viral sensorineural hearing loss is seen in 1 case followed by mumps.

Table – 4: Causes of sensorineural hearing loss (n=23)

Cause	Female	Male	Total	Percentage
Presbycusis	8	10	18	78.26%
Noise induced	-	2	2	7.69%
Sudden (post viral)	-	1	1	4.34%
Deaf mute	-	2	2	8.69%
Total	8	15	23	100%

Table – 5 shows out of the 6 cases of mixed hearing loss C.S.O.M with presbycusis (50%) is commonest presentation where female are more effected then male, followed by otosclerosis (33.33%) where only female are effected. Others one male patient (16.66%) was having congenital mixed hearing loss.

Table – 5: Causes of mixed hearing loss (n=6)

Cause	Female	Male	Total	Percentage
C.S.O.M+ PRESBY-CUSIS	2	1	3	50.00%
Otosclerosis	2	-	2	33.33%
Others	-	1	1	16.66%
Total	4	2	6	100%

Table – 6 shows the degree of hearing loss in all the 100 patients. 15 patients (15%) were having mild hearing loss (7 males and 8 females), 50 patients (50%) were having moderate hearing loss (24 males and 26 females), 27 patients (27%) were having moderately severe hearing loss (11 males and 16 females), 6 patients (6%) were having severe hearing loss (3 males and 3 females) and 2 male patients (2%) were having profound hearing loss.

Table – 6: Degree of hearing loss (n=100)

Degree	Male	Female	Total	Percentage
Mild(26-40db)	7	8	15	15%
Moderate(41-55db)	24	26	50	50%
Moderately severe(56-70db)	11	16	27	27%
Severe(71-90db)	3	3	6	6%
Profound(>90db)	2	-	2	2%
Total	47	53	100	100%

Discussion

Hearing loss is one of the common complaint with which patients come to ENT department in day to day practice. The cause of hearing loss can be conductive, sensorineural or mixed type. The causes of conductive hearing loss may be due to problem in external auditory canal, tympanic membrane, middle ear and Eustachian tube. Similarly sensorineural causes vary from inner ear to auditory center.

In our study, females are commonly affected than males (Female 53% and male 47%), but according to Liu H, Zhang H, Bentler RA, Mo L, Han D, Zhang L study 2011(1) males and females are equally affected.

According to the present study the commonest age group to be affected was 20-40yrs (36%) these findings correspond with Liu H, Zhang H, Bentler RA, Mo L, Han D, Zhang L study in 2011(1) who reported that the commonest age group of presentation of hearing is 30-60 years which is 48.4%.

According to the present study the commonest degree of hearing loss presentation was moderate (50%). These findings correspond with Margolis RH, Saly GL study 2008(2) who also reported that commonest degree was moderate (45%).

In my study the commonest type of hearing loss is conductive hearing loss(71%) and this finding correspond with Musani MA, Rauf A, Ahsan M, Khan FA study 2011(50%) (3). But according to Liu H, Zhang H, Bentler RA, Mo L, Han D, Zhang L study in 2011(1) and Margolis RH, Saly GL study 2008(2) commonest type of hearing loss is sensorineural hearing loss.

Chronic suppurative otitis media is the commonest cause of hearing loss in our study. These findings correspond with

Musani MA, Rauf A, Ahsan M, Khan FA study 2011(3) who reported that commonest cause of conductive hearing loss is chronic otitis media. But according to Abdel-Hamid O, Khatib OM, AlyA, Morad M, Kamel 2007(4) study the commonest cause of conductive hearing loss is otitis media with effusion.

Commonest cause of sensorineural hearing loss according to the present study is presbycusis and these findings correspond with Abdel-Hamid O, Khatib OM, Aly A, Morad M, Kamel S study in 2007(4) who reported that presbycusis (22.7%) is most common form of hearing loss followed by the otitis media.

Conclusion

A total number of 34800 patients attended ENT out patient department of Alluri Sita Ramaraju academy of medical sciences, from October 2009 to September 2011, out of which 100 patients of hearing loss were selected for study.

This study was aimed at finding the causes and types of hearing loss and various factors in different types of hearing loss ie conductive, sensorineural and mixed type of hearing loss.

- Out of the 100 patients selected for study, hearing loss was common in female (53%) than male (47%).
- Among the selected patients hearing loss was common in age group 20-40yrs (36%).
- The hearing loss is commonly bilateral (64%) than unilateral (36%).
- Conductive hearing loss is more common 71% followed by sensorineural hearing loss (23%) then mixed hearing loss (6%).
- The commonest cause of conductive hearing loss in this study is CSOM (54.9%)
- Followed by: Ossicular discontinuity 14.28%
- Otosclerosis 12.6%
- ET blockade 8.4%
- Serous otitis media 5.6%
- Sensorineural hearing loss is more common in male compared to female.
- The commonest cause of sensorineural hearing loss is presbycusis (78.26%) followed by noise induced hearing loss (7.69%).
- Mixed hearing loss is more common in female than male.
- The commonest cause of mixed hearing loss is CSOM with presbycusis (50.00%) followed by otosclerosis (33.33%).

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