

# [Sensoneural hearing loss: features of patients](https://assignbuster.com/sensoneural-hearing-loss-features-of-patients/)

Permanent unilateral and bilateral assymetrical sensorineural hearing loss: Clinical, vestibular, audiological and radiological evaluation.

Abstract

The aim of this study was to evaluate the clinical, vestibular, audiological and radiological features of patients with permanent unilateral and assymetrical sensoneural hearing loss (SNHL).

Material and methods: Twenty eight patients with either permanent unilateral and asymmetrical bilateral SNHL, diagonosed by means of pure tone audiometry(PTA) have been submitted to clinical, vestibular, audiological and radiological evaluation.

Results: Total twenty eight patients with male : female ratio of 2. 11 were analysed. 22 (78. 57%)patients had unilateral and 6(21. 43%)patients had bilateral asymmetrical SNHL. Right : left ratio in cases of unilateral SNHLwas 0. 83: 1. Both tinnitus and vertigo was present in 12(42. 95%)patients and absent in 10 (35. 8%)patients. On otoscopy tympanic membrane was intact in all cases. PTA showed profound loss in majority of cases. Tone decay was done in11 patients and was normal in all cases. Cold calorie was done in 27 patients and was absent in 7(25. 9%)patients , hypoactive in 8(29. 6%)patients. MRI study was done in 9 patients. Out of 9, 7 were normal and rest two showed positive findings.

Conclusion: Proper clinical, vestibular and audiological work up is important before radiological investigation is sought to increase diagonostic yield and cost effectiveness in unilateral, bilateral (asymmetrical)SNHL.

INTRODUCTION

Although a commonly encountered diagnosis by otolaryngolist, unilateral SNHL represents a difficult clinical entity for the specialist. Whereas the diagnosis is easily obtained by PTA, diagonosis of cause and treatment represents the complexity of this clinical situation. Further complicating work up is the evergrowing cost for laboratory and radiological studies(1). Reiss M (1994) carried out study for differential diagnosis of unilateral hearing loss(2). Hendrix RA(1990) carried out study on asymmetrical sensoneural hearing loss.(3). Asymetrical hearing loss is the difference of more than 10 db averaged over the frequencies 0. 5, 1, 2 and 4Khz or 20 db or more at any single frequency(4). A recent study has suggested a rule 3000 where in asymmetry of 15 db or more at 3000Hz require a MRI. If less than 15 db, a biannual audiometric follow –up is sufficient(13). In present study, we present clinical, vestibular , audiological and radiological features of patients with either permanent unilateral SNHL or asymmetrical hearing loss.

MATERIAL AND METHODS

This prospective study was conducted in the department of Otorhinolaryngology, government medical college, Srinagar, Kashmir on 28 patients, consisting both pediatric and adult patients from December 2013 to May 2014.

After taking history about hearing loss and associated symptoms, otoscopy and PTA, patients were subjected to audiological and vestibular evaluation. Radiological investigation(MRI) was done in selected group of patients because of financial and other reasons. Sex distribution, laterality, audiological, vestibular and radiological findings are presented in tables1-6.

RESULTS

A total of 28 patients were included in present study. Out of 28 patients, 19 were males and 9 were females with male to female ratio of 2. 11.(table 1). Involvement of left ear was more common than right and 6 patients (21. 42%) had bilateral asymmetrical loss(table2). Vertigo and tinnitus was associated symptoms in 12 patients(42. 95) and 10patients(35. 8%) presented with hearing without associated symptoms(table3). Tone decay test was normal in all tested patients.(table4). Cold calorie test was hypo- active in 8 patients(29. 6%) and absent in 7 patients(25. 9%)(table5). Radiological findings were normal in 7 out of 9 patients(table6).

DISSCUSSION

We describe 28 patients of unilateral and asymmetrical SNHL which were clinically , audiologically and radiologically evaluated. Male preponderance was observed in the present study which is consistent to other study.(5). In studies by Cadoni G etal(2005) and Stefano Berrettini(2013), both have female preponderance which is in contrast to present study(6, 7). In present study, left ear was more affected as compared to right which is in consistant to study done by Stefano Berrettini(2013).(7).

In our study tinnitus is present in 14 patients(50. 09%) and vertigo is present in 16 patients(59. 3%). Study done by Stefano Berrettini showed tinnitus was present in 87% and vertigo in 44% cases(7). In present study, Tone decay test(TDT) was done in 11 patients. TDT was not done inpatients having profound SNHL. In all patients in which TDT was done , results were normal. P. L. Bhatia (1969) etal in his study used TDT for diagonosis of retro cochlear pathology(8). It helps in diagonosing neural lesions quite accurately(9).

In our study vestibular function test (cold calorie test) was done in all patients except one. CCT was absent(no response) in 7 patients(25. 9%) and hypoactive in 8 patients(29. 6%). Stafano Berrettini etal used calorie stimulation test in his study(7). Although the findings of decreased vestibular function on calorie testing in ipsilateral side to a SNHL historically has been usefull in suggesting the diagonosis of vestibular schwannoma. But at present , it is not sensitive enough tobe helpful diagonostically for vestibular schwannoma because a small inferior vestibular nerve schwannoma might not cause an abnormal calorie response(10). Hypoactivity of the affected side is seen in meineres disease(11).

In present study, patients having hypoactive calorie test or absent calorie test or in whom tone decay test could not be done due to profound hearing loss were subjected to radiological investigation(MRI). One patient on MRI showed micro haemorrhages in left peritrigonal area and other patient on MRI showed vestibular schwannoma. MRI is now the recommended investigation for diagonosis of retrocochlear pathology.(2, 12). MRI scanning with Gagolinium will identify virtually all tumours and was considered to be gold standard(14). Recently T2-weighted fast spin echo MRI has been found to be sensitive and less expensive than gadolinium enhanced standard MRI(15).

CONCLUSION

Clinical , audiological and vestibular testing is important in diagonostic workup of unilateral and asymmetric hearing before radiological investigation is done to decrease economic burden and to increase diagonostic yield from definite radiological investigations.

REFERENCES

1. Jacques Peltier. Grand rounds presentation, UTMB, Dept. of Otolaryngology Nov10, 2004.

2. Reiss M, Reiss G. Differential diagonosis of unilateral hearing loss. Praxis . 2000. Feb 3; 89(6): 241-247.

3. Hendrix R A, De Dio RM, Scalajani AP. The use of diagonostic testing in asymmetrical SNHL. Otolaryngol Head Neck Surgery. 1990 oct; 103(4): 593-8.

4. David M Baguley. Age –related SNHL. Chapter238 a. Scott Browns vol 3 seventh Edition.

5. Prognostic factors of sudden SNHL in diabetic patients. Diabetes care October 2004 vol. 27 no10 2560-1.

6. Cadoni G etal. Sudden SNHL: Our experience in diagonosis, treatment and outcome. J. Otolaryngol. 2005 Dec; 34(6): 395-401.

7. Stefano B. etal. Analysis of 3-D(FLAIR) sequence in Idiopathic SSNHL. JAMA Otolaryngol head and neck surgery vol 139(no. 5)May 2013.

8. P. L. Bhatia. A Sinha. Tone decay test: A simple and reliable audiological test. Laryngoscope vol79 issue 11 page no 1879-90. Nov 1969.

9. Anirban Biswass. Tone decay test. Clinical and vestibulometry. Fourth Edition.

10. Glasscock-Shambauugh. Surgery of the ear. Chapter 32. Fifth Edition.

11. Abir K Bhattacharya, Jabin thaj. Investigation protocol for SNHL. Otorhinolaryngology Clinics: An international Journal, may-aug 2010; 2(2): 107-112

12. Mahillon V. Diagonostic management of unilateral SNHL in adults. Rev med Brux 2003 Feb; 24(1) : 15-19

13. Saliba I, Martineau G, Chagnon M. Asymmetric hearing loss: Rule 3000 for screening vestibular schwannoma. Otol Neurotol 2009 jun; 30(4) : 515-521

14. Fergusion etal. Efficiency of tests used to screen cp angle tumours: A prospective study. Br J Audiol 1996, jun : 30(30): 159-76

15. Shelton C. etal. Fast spin echo MRI: Clinical application in screening for acoustic neuroma. Otolaryngol Head neck surgery 1996: 114(1): 71-76

|  |  |  |
| --- | --- | --- |
| SEX | NO. OF PATIENTS | % |
| Male | 19 | 67. 85% |
| Female | 9 | 32. 15% |

Table1: Sex distribution of patients (n= 28)

|  |  |  |
| --- | --- | --- |
| Laterality | No. of Patients | % |
| Right | 10 | 35. 7% |
| Left | 12 | 42. 8% |
| Bilateral (Asymmetrical) | 6 | 21. 5% |

Table 2: Laterality of involved ear of patients (n= 28)

|  |  |  |
| --- | --- | --- |
| Associated symptoms | NO. OF PATIENTS | % |
| vertigo | 4 | 14. 2% |
| Tinnitus | 2 | 7. 1% |
| Both Present | 12 | 42. 9% |
| Both Absent | 10 | 35. 8% |

Table 3: Associated symptoms with hearing loss (n= 28)

|  |  |  |
| --- | --- | --- |
| RESULT | NO. OF PATIENTS | % |
| Normal | 11 | 100% |
| Abnormal | 0 | 0% |

Table 4: Tone decay test of patients (n= 11)

|  |  |  |
| --- | --- | --- |
| RESPONSE | NO. OF PATIENTS | % |
| Normal | 12 | 44. 5% |
| Absent(no response) | 7 | 25. 9% |
| Hypoactive | 8 | 29. 6% |

Table 5: Cold Calorie test of patients (n= 27)

|  |  |  |
| --- | --- | --- |
| FINDINGS |  | NO. OF PATIENTS (%) |
| Normal |  | 7(77. 8)% |
| Positive | Microhaemorrhage | 1(11. 1)% |
| Vestibular Schwanoma | 1(11. 1)% |  |

Table 6: Radiological (MRI) findings of patients (n= 9)