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Sensorineural Hearing Loss and its Management through Ayurveda – A Case Study

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ABSTRACT:

Hearing is one of the primary modes of communication. Hearing loss is one of the most common sensory deficit and it comprises a broad spectrum of clinical presentations. Impairment of hearing occurs when there is inability for sounds to be transmitted through or interpreted by our brain. Disorders of internal ear and auditory nerve will lead to sensorineural hearing loss (SNHL). The management of the SNHL is conventionally with rehabilitation with hearing aids and cochlear implants, and the option for pharmacologically treating the hearing impairment is limited. Hence there is need to lookback to our classical methods as told by our *Acharyas* for treating SNHL. In *Ayurveda*, hearing loss can be correlated to *badhirya*, wherein many therapeutic procedures, formulations have been told by our acharyas for the successful management of *badhirya*. So in the present case an attempt is made to treat a case of SNHL through *ayurveda* treatment strategy.

Keywords: *Badhirya*, sensorineural hearing loss, *karnapoorana*, hearing aids.

INTRODUCTION

Impairment of hearing can begin at birth(congenital) or it can occur over period of time (acquired) Noise induced hearing loss (NHL) can be through headphones, Tv, video-games. Acquired loss can be sudden or progressive. 360million people around worldwide have disabling hearing loss.

Hearing loss can be of conductive hearing loss and sensorineural hearing loss, and mixed hearing loss. Disorders of external and middle ear result in conductive hearing loss, whilst the pathology of inner ear and auditory nerve, lesions of cochlea and auditory pathway will lead to sensorineural hearing loss. The cochlear diseases (sensory type) and cranial nerve (CN)eight and its central connections (neural type) results in SNHL[1].

Lesions of eighth cranial nerve, and central auditory connections is referred to as retrocochlear hearing loss. Sensorineural hearing loss is caused by degeneration of cochlea, a sensory organ for hearing[2]. Among various types of cochlear cells, hair cells which convert sound stimuli to neural signals is the therapeutic target for developing therapeutics. Approximately one among three people between the age group of 60 and 74 has hearing loss[3]. In India as the conventional methods employed for the

treatment of snhl are hearing aids and cochlear implants which are not easily convenient to the common people ,hence ayurvedic methods of management of *badhirya* serves as the cost effective and easier mode of administration. In ayurveda, due to negligence of *karnanada* ,the vitiated *vata dosha* along with *kapha dosha* blocks the various sound carrying channels(*shabdavaha srotas*) in the initial days gradually it may lead to *badhirya*. In *badhirya* the treatment measures told for *vataja karnashoola* can be adopted[4]. In *shleshmaanubandha* conditions(*kapha* associated as a secondary dosha) it has to be eliminated through vamana[5] then followed by *nasya, tikshna dhumapana*. As per the involvement of the dosha, *snehana, svedana, nasya, shirobasti*, and *basti* treatments can be adopted. Samanya cikitsa of all the karna rogas as per acharya *sushruta* is *ghritapana* and intake of rasayana[6]. *Karnapoorana with bilvadi taila, ajadugdhasiddha taila* etc, is told by *acharya sushruta* as the specific line of management of *badhirya*.

MATERIAL & METHODS

Case study:

A 37year old male patient, with the complaints of reducing hearing in the both ears associated with ringing sound since 2months, approached to shalakya opd at SJIIM, Bengaluru .

History of present illness

Patient was apparently normal 5months back , gradually he developed reduced hearing sensation in both the ears associated with ringing sound in ears(tinnitus) for which he consulted in the nearby ent hospital and was suggested to get the pure tone audiometry test. For further treatment the patient approached ayurveda hospital.

History of past illness

Patient is not a known case of DM/HTN.

Family history: Nothing significant.

Personal history :

Appetite- loss of appetite

Sleep- sound

Bowel- regular

Micturition- 5-6 times/ day

General examination

Ashtasthanapareeksha

- *Nadi: 72/min*
- *Mutra: 5-6 times/day*
- *Mala: prakruta(1t/d)*
- *Jihwa: Alipta*
- *Shabda: vikruta.*
- *Sparsha: prakruta*
- *Druk: prakruta*
- *Akruthi: Madhyama*

Vitals

- Pulse rate:- 72/min
- Respiratory rate:- 24/min
- BP:- 110/80 mm0f Hg

SystemicExamination

Respiratory system, Cardiovascular system ,Central nervous system and musculoskeletal system has shown no abnormality.

Assessment of hearing : It was done through pure tone audiometric tests.

Examination :

On otoscopic examination : Table 1

Tuning fork test: Table 2

Diagnosis:-

PTA: Rt ear :25db (minimal hearing loss)

Lt.ear : 31.2db(mild sensorineural hearing loss)

Treatment:

In the first visit, *Nasya with anutaila* 10 drops in each nostril for 7days. *Karnapoorana* with *bilvadi taila* for 5days once in 5months. *Shiropichu* with *ksheerabala taila* for 14days was given . In the following visit, *pratimarsha nasya* with *anutaila* 2drops in each nostril daily for 5months was advised along with oral medications. Internally he was given ,tab *sarivadi vati* 1tid after food, cap.kbt101 -1bd after food, *ashwagandha lehyam* with milk 1tbspbd , *rasnadashamoola Kashaya* 15ml bd before food.

RESULTS

After 5months of the treatment procedure, there was quite good improvement in the symptoms of hearing loss and tinnitus also reduced. Audiometric test reports before and after the treatment are depicted in figure a,b respectively. PTA before treatment in Rt.ear :25db, Lt. ear:31db. PTA after treatment Rt.ear: 17.5db, Lt.ear:11.25db Fig.1. PTA report: Before treatment Fig.2. PTA report : After treatment

DISCUSSION

Nasya with *anutaila* helps in clearing the obstruction to the channels (*srotorodha*) and thereby helps in improving the function of *karnendriya*. In *Astanga sangraha* it is

explained that nasa is gateway to *shiras*(head) hence the drug of *nasya* administered through the nose reaches *shringhataka marma* and spreads to ear, eye. Hence *Nasya* is the best method to eliminate the vitiated doshas from *uttamanga*. *Karnapooran* is the best remedy for karna rogas[7]. The oil that is used for *karnapoorana* here is *bilwa taila* which cleanses ear canal and reduces hearing loss and tinnitus. Daily Practice of *Pratimarsha nasya* with *anutaila* keeps the sensory organs healthy and prevents deafness. *Shiro pichu* is a procedure which is one among *murdhini taila*, and it's a form of *bahya snehana* which can be followed to control *vata dosha* which is affected in the *badhirya*. *Shiropichu* has *indriya tarpana* and *balya* action. Cap.kbt101 is nervine tonic. *Ashwagandha lehya* is *balya* and *rasayana*. *Rasnadashamoola* Kashaya helps in reducing the vitiated *vata dosha*.

CONCLUSION

Impairment in hearing is the most common cause of disability worldwide. Although in the conventional system of medicine the management of snhl goes with hearing aids, and cochlear implants, the exploration for the novel pharmacotherapeutic measures remains the key challenge. ayurveda has got unique methods to deal with snhl that is through adopting treatments like *nasya*, *karnapoorana*, *shirodhara*, *talam*, *shiropichu* etc. Through these therapeutical procedures one can control the progress of hearing loss and can maintain a good healthy hearing.

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Table 1otoscopic examination :

Examination	Rt. Ear	Lt. Ear
EAC	Clear	Clear
TM	Visible Intact	Visible Intact
Cone of light	Seen	Seen

Table 2 Tuning fork test:

	Rt.Ear	Lt.Ear
Rinne's test	Positive (AC>BC)	Positive (AC>BC)
Weber's test	-	-

Fig.1. PTA report: Before treatment

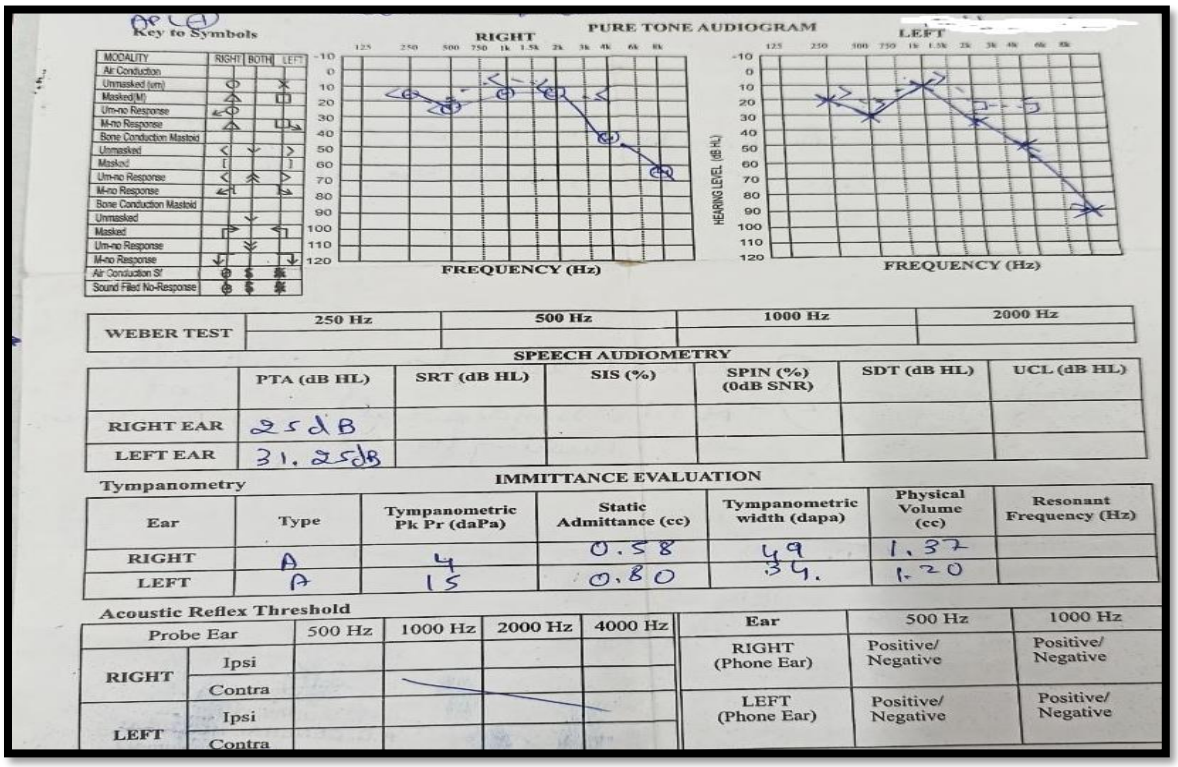
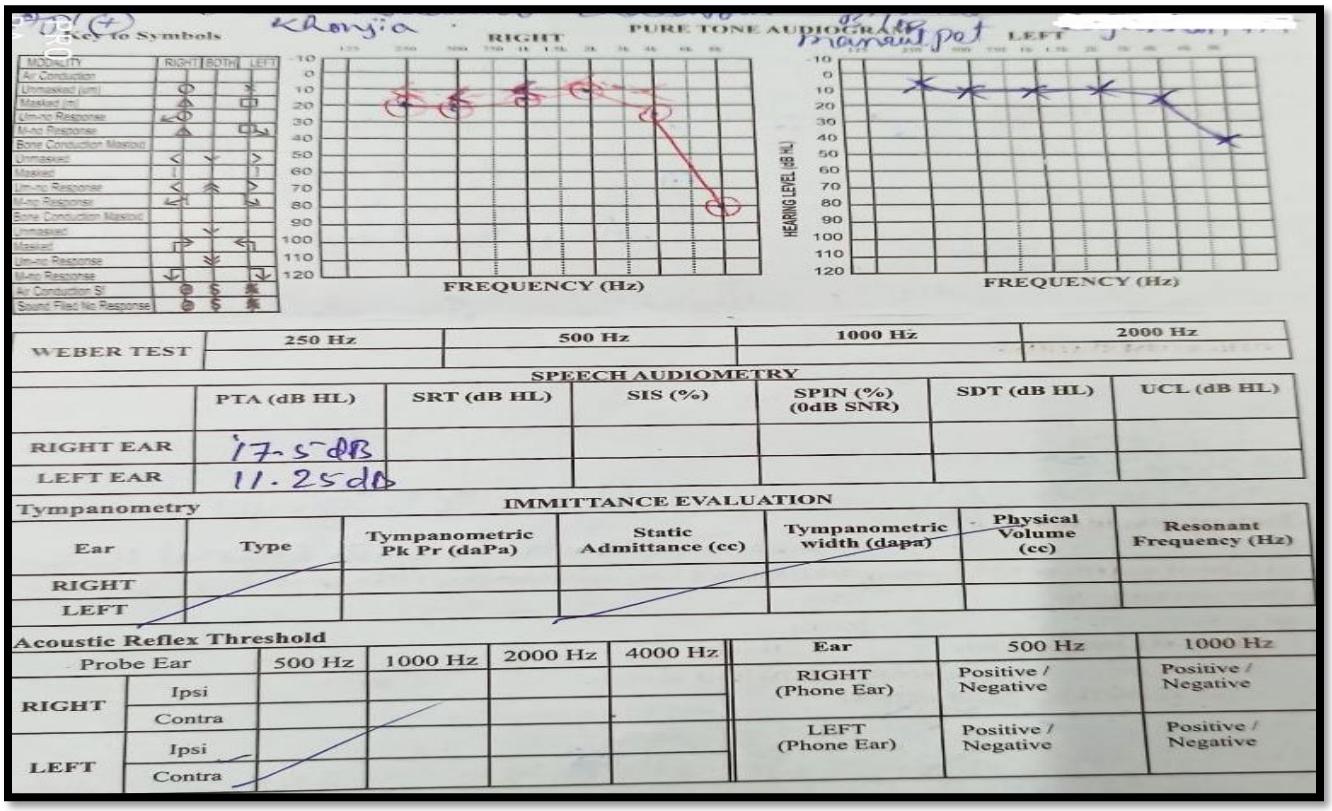


Fig.2. PTA report: After treatment



Key to Symbols

MODALITY	RIGHT	BOTH	LEFT
Air Conduction			
Unmasked (um)			
Masked (m)			
Um-no Response			
M-no Response			
Bone Conduction Masked			
Unmasked			
Masked			
Um-no Response			
M-no Response			
Bone Conduction Masked			
Unmasked			
Masked			
Um-no Response			
M-no Response			
Air Conduction SI			
Sound Field No Response			

PURE TONE AUDIOGRAM

RIGHT

LEFT

HEARING LEVEL (dB HL)

-10 0 10 20 30 40 50 60 70 80 90 100 110 120

FREQUENCY (Hz)

FREQUENCY (Hz)

WEBER TEST	250 Hz	500 Hz	1000 Hz	2000 Hz

SPEECH AUDIOMETRY

	PTA (dB HL)	SRT (dB HL)	SIS (%)	SPIN (%) (0dB SNR)	SDT (dB HL)	UCL (dB HL)
RIGHT EAR	17.5 dB					
LEFT EAR	11.25 dB					

IMMITTANCE EVALUATION

Tympanometry

Ear	Type	Tympanometric Pk Pr (daPa)	Static Admittance (cc)	Tympanometric width (dapa)	Physical Volume (cc)	Resonant Frequency (Hz)
RIGHT						
LEFT						

Acoustic Reflex Threshold

Probe Ear		500 Hz	1000 Hz	2000 Hz	4000 Hz
RIGHT	Ipsi				
	Contra				
LEFT	Ipsi				
	Contra				

Ear	500 Hz	1000 Hz
RIGHT (Phone Ear)	Positive / Negative	Positive / Negative
LEFT (Phone Ear)	Positive / Negative	Positive / Negative