

A case discussion on presbycusis

Savita S. Angadi, Vijaykumar S. Kotrannavar¹

Departments of Shalakya Tantra, and ¹Rasashastra, K.L.E. University's Shri. B.M.K. Ayurveda Mahavidyalaya, Shahapur, Belgaum, Karnataka, India

ABSTRACT

Presbycusis is one among the many socio-medical problems, which is considered as a hidden disability. The hearing impairment in elderly people is described as presbycusis. Hearing problem among elderly people is a major issue and a person with hearing loss may be unable to hear doorbells and alarms, to respond while talking with anyone, etc. All this can make them feel frustrated, lonely, and depressed. It is the third most common chronic condition after arthritis and hypertensive diseases among elders. Hearing loss can be improved by using the hearing aids. Hearing aids work well for some while for others; it may not be a perfect solution due to many reasons such as some people do not buy aids that meet their needs, incorrect amplification adjustments, low custom design, etc. In classics of Ayurveda this ailment has been described as *karnabaadhira* under the heading of ear diseases. *Karnapurana* (Instillation of medicated oil into the external auditory canal) is one of the major treatments for ear diseases explained in classics. Clinical observation has shown its effectiveness in the management of presbycusis. A case report of 75-year-old male who presented with complaints of reduced hearing and tinnitus in both ears has been presented here.

Key words: *Bilwa taila*, *karnabaadhira*, *karnapurana*, presbycusis

INTRODUCTION

Hearing impairment is the most frequent sensory deficit in human populations, affecting more than 278 million people in the world. In India, 63 million people (6.3%) suffer from significant auditory loss.^[1] The prevalence of presbycusis rises with age, ranging from 25% to 40% of the population aged 65 years, 40-66% in patients older than 75 years, and more than 80% in patients older than 85 years.^[2] Risk factors for presbycusis include systemic diseases and poor habits that cause inner ear damage and lead to impaired hearing. Age, the male gender, diabetes mellitus, hypertension and hereditary hearing loss are all identified as risk factors. Poorly controlled hypertension or

diabetes may pre-dispose to hearing impairment through the occurrence of chronic arteriosclerosis which in turn causes a reduction in the blood supply to the inner ear, as these are common chronic diseases among older adults. Hearing loss due to aging occurs from a combination of environmental and genetic factors. However, unfortunately, for various reasons the deafness has not drawn enough attention.

In the majority of presbycusis cases, hearing loss develops as a consequence of degeneration of the inner ear, to be more precise the area of the inner ear containing microscopic blood vessels. There are additional changes to hair cells accompanied by loss of these cells and further hearing problems.^[3] Treatment for presbycusis in the majority of cases includes appropriate hearing aids. This is only a partial solution of the problem. However, it has its own limitations and drawbacks. Untreated presbycusis leads to social isolation, and depression, and may cause or worsen cognitive impairment and dementia.^[4] In Ayurveda it can be taken as *vaardhakya* (*senile deafness*) one of the *karnagata roga* (ear disease) which is having the main symptom as reduced hearing.^[5]

Most hearing loss is either due to the disturbance of *vata dosha* alone or vitiation of *vata-kapha* together. Here, *avashyaya* (cold), *jalakreeda* (swimming), and *vaardhakya* (senility) are the main etiological factors, which result in the vitiation of *vata* and *kapha dosha*. *Vata* vitiation can result in damage to the auditory nerve and nerve

Address for correspondence:

Dr. Savita S. Angadi, Department of Shalakya Tantra, K.L.E. University's Shri. B.M.K. Ayurveda Mahavidyalaya, Shahapur, Belgaum - 590 003, Karnataka, India.
E-mail: savita.angadi@yahoo.com

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endings, which can lead to hearing loss and ringing in the ear. When *kapha* is vitiated, the result is obstruction of the sound pathway. Finally, disturbances of *vata* as well as *kapha* can affect the auditory nerve resulting in degeneration of the end organs of hearing or obstructions to the flow of nerve impulses, ending in presbycusis.

The main treatment of *karnagata rogas* is *Karnapurana*. As the root cause for *karnagata rogas* lies in the *shabdavaha srotas* and the *dosha* involved is *vata-dosha*, hence the treatment of choice is *karnapurana*. *Yogratnakar* states that “*Puranam katutailam hitam vataghnameva cha*”⁶¹ hence *Karnapurana* was selected as treatment of choice to combat the root cause of *baadhira* (deafness). This case showed good results.

CASE REPORT

A 75-year-old male presented with the complaints of reduced hearing in both ears associated with occasional occurrence of tinnitus, since 2 years. The patient is a known case of hypertension and is under medication.

On examination

On local examination of the ear [Table 1] the pinna, external auditory canal and tympanic membrane were normal. On tuning fork test, air conduction and bone conduction were reduced, which interprets the low +^{ve} Rinne. On pure tone audiometric examination, the case was diagnosed as moderately severe sensori-neural hearing loss, with hearing threshold level in both ears between 61-80 dB hearing loss [Table 3]. The patient was unable to hear and understand even on shouting loudly. Routine hematological (hemoglobin, total count, differential count and erythrocyte sedimentation rate) investigations were done. The percentage of hemoglobin was reduced.

Past history

Patient had taken hearing aid 1 year back but it was of no use.

Procedures administered to the patient

The patient was administered with *Karnapurana* once daily for 7 consecutive days after sunset [Figure 1]. The treatment was repeated thereafter for three times, once every 15 days. The details of the procedures are described in Table 2.

Pathya (Do's) - Advised to take *laghu* (light), *supachya* (easy to digest) and *ushna* (warm) *ahaara*, *ghritapana* (intake of ghee), wheat, rice, green gram, brinjal, drum stick, bitter gourd, *bhrabmacharya* (maintaining celibacy), *alpa bbhashana*, etc., which pacifies the *vata-dosha*.

Apathya (Dont's) - Advised not to take head bath, drink cold water or other drinks, clean ears, exposure to cold



Figure 1: Procedure of *Karnapurana*

Table 1: Local examination of ear

External ear	Right side	Left side
Shape	Normal	Normal
Size	Normal	Normal
Color	Light brown	Light brown
	No skin changes	No skin changes
Pre-auricular region	Normal	Normal
Post-auricular region	Normal	Normal
External auditory canal	Normal	Normal
Tympanic membrane	Intact	Intact

Table 2: Procedure of *Karnapurana*

<i>Poorvakarma</i> (pre-requisite procedure)	<i>Karnabhyanga</i> (Temporal region massage) with <i>Murchita Tila taila</i> <i>Nadi Swedana</i> (Sudation therapy)
<i>Pradhanakarma</i> (main procedure)	Instillation of 10-15 drops of <i>Bilwa taila</i> in each external auditory canal for 15-20 min after sunset
<i>Pashchatakarma</i> (post-procedure)	Stuff ear with cotton and in the morning dry ears with fresh cotton

wind, exercise, brushing the teeth with sticks, etc., which leads to aggravation of *vata dosha*.

RESULTS

The tinnitus was reduced by 1 month and subjective improvement in hearing was observed by 2 months. The patient was able to hear sounds and understand words spoken loudly after 4 months. After 6 months, he was able to hear and repeat words using raised voice at a distance of 1 m. The patient was advised to avoid exposure to loud noise. With a follow-up for a period of 1 year, the patient had a marked improvement in hearing [Table 3]. Meanwhile, he was prescribed oral medication of, *Induvati* one tablet twice daily for 3 months, *Ashwagandhadi churna* 1tsp BD with milk and *Karnapurana* with *taila* once in a week for 6 months.

DISCUSSION

Loss of hearing is one of the important causes of

Table 3: Hearing level in decibels(dB) before and after treatment

Frequency Hz	Before Treatment								After Treatment							
	250	500	1K	2K	3K	4K	6K	8K	250	500	1K	2K	3K	4K	6K	8K
R- Air	40	55	50	60	-	65	75	80	50	55	45	65	-	60	60	65
R- Bone	35	40	45	55	-	60	65	-	45	50	40	60	-	55	50	-
L- Air	55	50	55	70	-	65	80	65	40	45	50	60	-	65	65	55
L- Bone	35	40	45	60	-	60	70	-	35	40	40	55	-	60	60	-

psychological trauma of the sensory losses and this is exactly how the deaf drowns in a sea of silence.^[7] The degenerative changes that occur in the cells of organ of corti and nerve fibers result in a slow, progressive deafness which may be associated with tinnitus.^[8]

Mode of action

Karnaabhyanga (Massage of the ear)

Here for *karnaabhyanga murchita tilataila* (processed sesame seed oil) was used. *Taila* is having *vyavayi, vikaasi, sukshma, vishada, guru and sara* properties, *ushna veerya* and *madhura vipaka*. Hence mainly acts on vitiated *vata dosha* and pacifies it and normalizes its function. As *Tila taila* is having *brihana (~nourishing)*^[9] the nourishment of *shraavanendriya* (ear) and to improve the hearing mechanism.

Bhashpa swedana (Sudation therapy)

Swedana karma by virtue of its properties like *ushna, sara, snigdha, sukshma*, and *shitira*, etc., aids quicker absorption of oil into the ear and helps in *vata shamana* (pacification of *vata dosha*), improves the blood circulation and gives strength to the ears.^[10] These actions in turn help to improve auditory function.

Karnapurana (Instillation of medicated oil into external auditory canal)

The ears are said to be the seat of *vata dosha* and are responsible for hearing mechanism as quoted in Asthanga Hridaya "*Pakwashaya katisakthi shrotasthi*" "*Buddhi bridayendriya chitta drik.*^[11]" The disease *baadhriya* occurs in ears is mainly due to vitiation of *vata dosha*. *Karnapurana* does the *vata shamana* and maintains the normal hearing capacity, as quoted told by *Acharya Charaka* "*na karnarogaa vatottaha* *nochchai shrutithi na badiryam syannityam karma tarpanaat*"^[12] *Bilwataila* was used for *karnapurana*. *Bilwa* exhibits *ushna veerya* and *vatabara and kaphahara*. action and helps restore *vata dosha* to normalcy. In one of the research works on leaf extract of *Bilwa* the results have shown the regeneration of damaged cells in pancreas.^[13] *Bhavaprakash Nighantu* mentions that *Bilwa* exhibits action on nerves and hence is considered as a *nadi bahya* (gives strength to nerves) drug.^[14] Thus, it may be inferred that *Bilwa* may be helping in nourishment of the ear cells as well as regeneration of damaged cells in deafness.

Oral medication

Ashwagandbadi churna contains *Ashwagandha, Yastimadhu,*

Haridra, and *Rasna*, which are used to heal and regenerate damaged nerve cells, thus improving the nerve function. *Indu vati* mainly contains *Suvarna bhasma* and *Abbraka bhasma* which are considered as immune modulatory medicines, used to reduce the deleterious effects of stress and to boost the immune status of the body. These compounds exert a *rasayana* effect. As the patient was elderly, we gave *rasayana* drugs to improve *rasa* and *rakta dhatus*. This might have contributed in the early improvement in sensori neural hearing loss and prevented further deterioration of this condition. A correction of abnormalities in the body tissues indirectly helps in improvement in hearing by reducing the dysfunction of the inner ear.

This study shows that there is significant improvement in hearing mechanism and there were no adverse effects seen throughout the treatment. The mode of treatment was found to be effective, safe and easy to implement. Thus, this paper aims at presenting a treatment protocol mentioned in the Ayurvedic texts that is effective in treating the known cause of the condition and improving the functional integrity of the inner ear and the central nervous system.

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