AYURVEDIC MANAGEMENT OF OTOSCLEROSIS: A CASE STUDY

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ABSTRACT

Otosclerosis is one of the ear problems with which people are increasingly suffering. It affects the quality of life of the sufferer by inducing loss of hearing and often tinnitus leading to anxiety, depression and diminished interest and enthusiasm in his/her work. The modern healing science offers only hearing aids to combat the problem, which is not acceptable heartedly by most of the people. In addition to it, the hearing aids is also not helpful for all. The another more effective measure i.e. surgery is also not free from adverse after-effects. Therefore it is the need of hours to make an availability of a conservative and effective method of treatment by the practitioners of Alternative therapies to the suffering mankind. This article is an effort in this regard. Here an interesting case of Otosclerosis, successfully managed by adopting Ayurvedic procedures (Ksheera dhuma Nasya, Karnapooran, Matravasti) and medicines, has been presented. The treatment carried out was planned by assuming Otosclerosis equivalent to Badhirya described in Ayurveda-the science, art and way of a meaningful life.

KEYWORDS: Otosclerosis, Badhirya, Ksheera dhuma Nasya, Karnapooran, Matravasti.

INTRODUCTION

Otosclerosis is a term derived from oto, meaning “of the ear,” and sclerosis, meaning “abnormal hardening of body tissue.” The condition is caused by abnormal bone remodeling in the middle ear. Bone remodeling is a lifelong process in which bone tissue renews itself by replacing old tissue with new. In otosclerosis, abnormal remodeling disrupts the ability of sound to travel from the middle ear to the inner ear.
Histologically, otosclerosis is characterized by two phases: i) otospongiosis; and ii) otosclerosis. In otospongiosis, affected bone becomes hypervascular and osteoclasts and osteolytic osteocytes cause enlargement of the vascular spaces of the bone. After otospongiosis, bone deposition characterizes the otosclerosis phase.

**Etiology**
While the etiology of otosclerosis remains unknown, there are two main theories regarding its origin; genetic and viral. It is inherited in an autosomal dominant fashion with variable penetrance.\(^1\) The interplay of genes with environmental factors is thought to be critical in the phenotypic activation of genetic susceptibility.\(^2\) There is considerable genetic heterogeneity, with at least seven loci identified via linkage studies, as well as rare monogenic forms.\(^3\) Environmental factors implicated in the aetiology of otosclerosis include oestrogens, fluoride and viral infections such as measles. Measles virus RNA has been found in the footplate of otosclerosis specimens but there are other cases of stapes fixation that appear not to be associated with measles infection.\(^4\) It is likely that a number of different pathways underlie the development of otosclerosis, with different genetic and environmental risk factors contributing to a similar final disease outcome.\(^2\)

**Epidemiology**
Histological otosclerosis is present in around 2.5% of people.\(^5\) However, the clinical manifestations are seen in only about 0.3%. The annual incidence is thought to be declining as measles becomes a rarer infection, due to recent childhood immunisation programmes against the disease. In Germany, decrease in hospital treatment for otosclerosis has been observed since the introduction of measles vaccination.\(^6\)[7]

**Diagnosis**
Otosclerosis is traditionally diagnosed by characteristic clinical findings, which include progressive conductive hearing loss, a normal tympanic membrane, and no evidence of middle ear inflammation. The cochlear promontory may have a faint pink tinge reflecting the vascularity of the lesion, referred to as the Schwartz sign.

Usually noticeable hearing loss begins at middle-age, but can start much sooner. The hearing loss was long believed to grow worse during pregnancy, but recent research does not support this belief.\(^8\)[9]
Investigations

Audiometry is the primary investigation of choice. Bone and air conduction test typically reveal a purely conductive, predominantly low-tone loss. If the cochlea is also involved, there will be mixed sensorineural/conductive loss.

It is difficult to distinguish the sensorineural loss of otosclerosis from other causes of sensorineural hearing loss. Audiogram patterns such as Carhart's notch (a drop in bone conduction thresholds of 20-30 dB, most pronounced at 2000 Hz) and excessive sensorineural loss (beyond any likely presbycusis) may help to discriminate.

Tympanometry may show a stiffness curve, indicating low compliance of the tympanic membrane and ossicular chain.

Fine-slice CT scanning may be used to demonstrate new abnormal bone deposition in the temporal bone via the so-called 'halo' sign, which appears to be a useful diagnostic adjunct in this condition.\(^{10}\)

Treatment

I) Medical treatment

Earlier workers suggested the use of calcium fluoride; now sodium fluoride is the preferred compound. Fluoride ions inhibit the rapid progression of disease. In the otosclerotic ear, there occurs formation of hydroxylapatite crystals which lead to stapes (or other) fixation. The administration of fluoride replaces the hydroxyl radical with fluoride leading to the formation of fluorapatite crystals. Hence, the progression of disease is considerably slowed down and active disease process is arrested. This treatment cannot reverse conductive hearing loss, but may slow the progression of both the conductive and sensorineural components of the disease process. Recently, some success has been claimed with a second such treatment, bisphosphonate medications that inhibit bone destruction.\(^{11,12}\) However, these early reports are based on non-randomized case studies that do not meet standards of clinical trials.\(^{13}\) There are numerous side-effects to both pharmaceutical treatments, including occasional stomach upset, allergic itching, and increased joint pains which can lead to arthritis.\(^{14}\) In the worst case, bisphosphonates may lead to osteonecrosis of the auditory canal itself.\(^{15}\) Finally, neither approach has been proven to be beneficial after the commonly preferred method of surgery has been undertaken.
II) Surgical treatment
There are various methods to treat otosclerosis. However the method of choice is a procedure known as Stapedectomy. Early attempts at hearing restoration via the simple freeing the stapes from its sclerotic attachments to the oval window were met with temporary improvement in hearing, but the conductive hearing loss would almost always recur. A stapedectomy consists of removing a portion of the sclerotic stapes footplate and replacing it with an implant that is secured to the incus. This procedure restores continuity of ossicular movement and allows transmission of sound waves from the eardrum to the inner ear. A modern variant of this surgery called a stapedotomy, is performed by drilling a small hole in the stapes footplate with a micro-drill or a laser, and the insertion of a piston-like prothesis. The success rate of either surgery depends greatly on the skill and the familiarity with the procedure of the surgeon. However, comparisons have shown stapedotomy to yield results at least as good as stapedectomy, with fewer complications, and thus stapedotomy is preferred under normal circumstances.

CASE REPORT
A 20 year old boy reported shalakya OPD of Patanjali Ayurved Hospital in February 2016 as a diagnosed case of otosclerosis. He had developed sensorineural deafness and tinnitus along with progressive conductive hearing loss during last 2 years. Having heard the surgery as a single solution to his problem, that too not free from possible side effects, the patient presented himself for Ayurvedic management to avoid the surgery.

On the basis of similar clinical presentation of otosclerosis with that of Badhirya, the patient was switched on to following procedures:
1. Ksheera dhuma Nasya Ksheerabala Taila (101A)
2. Karnapoorana with Dhanvantara Taila
3. Shirodhara with Ksheerabala Taila
4. Matravasti

The above procedures were carried out for 7 days and were followed by these drugs:
1. Ekangveer ras -250mg
Mahavaat Vidhwans Ras 125mg
Swarnamakshika 125mg
Ashwagandha churna 2gm
Brihat Vata chintamani ras125m
1 dose x BD
2. Saraswatarista- 20 ml x BD with equal amount of water after meal
3. Sariwadi vati- 2 x BD
4. Bilva Taila 5-5 drop each ear x BD

RESULTS
After 2 months the patient visited with his symptoms (hearing loss and tinnitus) very much minimized. His Audiometry test was repeated .the report was in accordance with the splendid improvement in the condition of the patient. Audiometric tests before and after therapy are depicted in figure 1 and figure 2 respectively.

FIG.1- AUDIOLOGY BEFORE THERAPY

FIG. 2- AUDIOLOGY AFTER THERAPY
DISCUSSION
As mentioned earlier, otosclerosis can be correlated with Baadhirya which is due to vitiating of Vata and Kapha Dosha. The procedure like Ksheeradhuma Nasya, Karnapoorana with Dhanvatara Taila, Shirodhara and Matravasti – all are very much capable of alleviating Vata and Kapha Dosha. The very process of Dosha alleviation was further enhanced by the medicines i.e. Ekangveer ras, Mahavat vidhwans ras, Swarn mashk bhasm, Ashwagandha churna, Brihat Vata Chintamani ras. Rest of the morbid Dosha was expelled by Sarswaratista, Sariwadi Vati, Bilva Taila.

CONCLUSION
The potential of Ayurvedic procedures and medicines have not been exploited yet. There is extensive need of the same to improve the quality of life of the patients suffering from many disorders like otosclerosis. Alternative therapy must be tried in recalcitrant disorders the treatment for which are not promising in the mainstream healing system.

REFERENCES