



A review on association of *Karnanada* and diabetes mellitus

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Abstract-

Tinnitus is the perception of ringing sound and noise in the ear which is originated within the patient. Diabetes mellitus (DM) is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period. Tinnitus is also a side-effect of some metabolic disorders, medications, and may also result from an abnormally high level of insulin. *Acharya Sushruta* says when *Vata* covered with *Doshas* taking faulty passage get located in sound carrying channels, then the patient perceives various types of sound; this disease is known as *Pranada* or *Karnanada*. In this conceptual paper an attempt is made to find out a association between diabetic and tinnitus on

Article received on-18March
Article send to reviewer on-
18 March
Article send back to author
on-22 March
Article again received after
correction on -29 march

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the basis of *Ayurvedic* prospective. This conceptual study has compiled from ancient *Samhitas*, previous thesis, and different books and published articles. Hyperglycemic condition may damage the 8th cranial nerve, which is the nerve responsible for sound transmission and balance maintenance from the inner ear to the brain. Also the raised blood sugar level can disturb the normal physiology of sodium-potassium ATPase pump, which is responsible for creating the pathogenesis of tinnitus. Therefore, tinnitus can be taken as a complication of diabetes mellitus.

Keywords: Tinnitus, Diabetes mellitus, Hyperglycemia, *Karnanada*

INTRODUCTION:

Tinnitus stands for the perception of sound (ringing or noise), which has no external stimulus¹. Diabetes mellitus (DM), commonly referred to as diabetes, is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period². Tinnitus is also a side-effect of some metabolic disorders, medications, and may also result from an abnormally high level of insulin³.

According to Brazilian Journal of Otorhinolaryngology, a study revealed that elevation in blood sugar level and impaired insulin metabolism were found in 87.7 % of its participants suffering from peripheral vestibular disorder⁴. Hence the present study is an attempt to find an association between tinnitus and DM from Ayurveda perspective.

AIM OF THE STUDY:

To find an association between diabetes and tinnitus on the basis of *Ayurvedic* and modern prospectus.

MATERIALS AND METHODS:

This conceptual study has been compiled from ancient *Samhitas*, previous thesis, different books and published articles.

MODERN REVIEW:

Tinnitus is not confined as a disease often it exist as a symptom. It is characterized by perception of sound in one or both ears or in the head, in the absence of any external sound. It is often referred to as "ringing in the ears", although some people hear hissing, roaring, whistling, chirping, or clicking sounds. The ringing sound volume has a

broad range which may be delicate to devastating. Still exact physiological causes are unknown⁵.

One of the possible mechanisms relies on optoacoustic emissions. The inner ear contains tens of thousands of minute inner hair cells with stereo cilia which vibrate in response to sound waves and outer hair cells which convert neural signals into tension on the vibrating basement membrane. Neural feedback loop connects sensing cell to vibratory cells. This loop is regulated by brain and normally this loop adjust just below onset of self-oscillation which provides the ear specular sensitivity and selectivity. If sometime changes cross the barrier of oscillation results as origin of tinnitus. Exposure to intense noise destroys hair cells. Studies have revealed that loss of hair cells activate different neurons and auditory parts of brain leads to perception of sound.

Diabetes mellitus is a group of metabolic diseases in which there are high blood sugar levels over a prolonged period. It is classified as type I and type II. Insulin is a hormone which is responsible for the glucose metabolism. In type I diabetes body does not make insulin. In type II diabetes which is the more common type, body does not make or use insulin well. Without enough insulin, the

glucose stays in blood. In prediabetes condition in which blood sugar is higher but not high enough to diagnose diabetes having higher risk of getting type II diabetes. Over time, having too much glucose in your blood can cause serious problems. It can damage your eyes, kidneys, and nerves.

AYURVEDA REVIEW:

Vata dosha mainly regulates various movements in the body such as sensory movements, circulation and digestive movements etc. It is made of *Vayu* (air) and *Aakash* (space) *Mahabhoota* (element). If *Vata* gets vitiated air and space elements get increased in physiology and disturb all the bodily function of movements. This leads to pressure in the head, nervous system, dryness in the senses, tinnitus, loss of sleep, dry scalp, dry skin, tendency of instability, anxiousness and nervousness etc. In tinnitus the sound is experienced only by the patient and cannot be detectable from external. It is not a person's imagination but result of internal *Vata Dosha* imbalance. As per *Ayurveda* this can be taken as *Karnanada*. According to *Ayurveda* *Vataja Prakriti* people are prone to suffer with high frequency, *Pittaja Prakriti* people with moderate frequency and *Kaphaja Prakriti* people have less tendency for the same.

Another similar condition is *Karnaksveda* (sound in ears). In this condition *Vata* associated with *Pitta*, *Kapha* and *Rakta*, get aggravated by exertion, wasting, intake of rough and astringent food, after head-evacuation, excessive use of cold and get located in the passage of ear and thus produces sound of bamboo in the ears.

The difference between *Karnanada* and *Karnaksveda* is that the former is caused by single *Vata* with perception of various sounds while the latter is produced by *Vata* associated with other *Dosha* and with flute's sound.

In Diabetic Peripheral Neuropathy, functions of peripheral nerves are impaired. As per *Ayurveda*; functions of peripheral nerves are mainly attributed to *Vata Dosha* in particular to *Vyana Vata*. As normal *Vata Dosha* does the functions in the body such as *Utsaha Shakti* (enthusiasm), *Shwasa Prashwasa Kriya* (respiration), *Chesta* (motor and reflex activities) etc. *Vata Dosha* act as receptor, as well as a stimulator. In other words, it initiates the functions in the body and receives the stimulation from external environment. *Vata Dosha* is invisible, only its functions are visible. *Vata Dosha* is *Sookshma* (minute), *Swayambo* or *Sarvagata* (moves everywhere)⁶. These

qualities of *Vata Dosha* can be compared with that of a nerve impulse. The primary function of a peripheral nerve is to transmit signals from the spinal cord to the rest of the body or to transmit sensory information from the rest of the body to the spinal cord. A nerve impulse is self-originated, propagated and reaches at the target site. Hence, it is compared with the functions of *Vata Dosha*. Abnormal functions of *Vata Dosha* are prerequisite for development of *Vata Roga* (neural disorders). Hence, involvement of peripheral nerves in DPN is considered based on abnormal functions of *Vata Dosha*.

DISCUSSION:

Acharya Sushruta says when *Vayu* covered with *Doshas* taking faulty passage get located in sound carrying channels then the patient perceives various types of sound⁷. Meanwhile *Charaka* mentioned the *Samprapti* of *Madhumeha* due to *Shuddha Vata*. Due to *Vatakara Nidana*, *Vata Dosha* gets provoked leading to *Kshaya* of other two *Doshas* and *Sarabhoota Dhatus* like *Vasa*, *Majja*, *Lasika* and *Oja*. Due to *Kshaya* of *Dhatus Vata* further gets provoked. This highly provoked *Vata* draws *Oja* towards *Basti* and leads to *Madhumeha*⁸. This is *Asadhya* to treat due to its *Arambhaka Dosha Vata* and resultant further provocation due to

Dhatukshaya. As per *Ayurveda*; functions of peripheral nerves are mainly attributed to *Vata Dosha* in particular to *Vyana Vata*.

Continual supply of oxygen and glucose are essential to serve function of inner ear. A study has revealed that high blood sugar level can cause tinnitus by 3 ways. First long term high blood sugar can destroy the eighth cranial nerve which is related to sound and balancing action. Second, high blood sugar level can damage blood vessels which supply oxygen and nutrients to inner ear. Third, mildly raised blood sugar can interfere sodium potassium ATPase pump that is responsible for maintains of inner ear fluid essential for balance and hearing.

Therefore, normal functioning of inner ear get easily upset by alteration in glucose metabolism. Tinnitus can't be measure by expending objective methods because often

related with subjective phenomenon. Although there is no specific cure for tinnitus, those affected can learn techniques to successfully manage their tinnitus to the point where it is no longer a problem for them.

CONCLUSION:

Considering all above factors, it can be said that hyperglycemic condition damage the auditory nerve which is responsible for hearing and balance. Raised blood sugar levels disturb the nutrition and normal physiology of sodium-potassium ATPase pump, which is responsible for creating the pathogenesis of tinnitus. In *Ayurveda* also it has been discussed that vitiated *Vata Dosha* is responsible for pathogenesis of DM and tinnitus. Hence it can be concluded that tinnitus is a complication of diabetes mellitus.

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