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Noise as an Ear-therapy Dilemma

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Introduction

Tinnitus or noise in the ear is a mysterious symptom that, despite numerous theories and efforts to discover its essence, remains an unresolved pathogenic mechanism. Tinnitus is defined as a subjective perception of sound in the ear or head, which does not exist, and which occurs without the apparent external sound, i.e. it is a phantom hearing augmentation. The question is, why does the brain create a listening experience in the absence of an external sound stimulus? Acupuncture or noise in the ear is generally manifested as buzzing, thumping, ringing or crackling in the ear. It is interesting, not only because of the frequent occurrence of people with hearing impairments, but also because it can occur in completely healthy people and people with normal hearing. There is no correlation between the intensity of the noise and the degree of human suffering. Sometimes a small noise can lead to major psychological problems and vice versa. The limbic system is responsible for the emotional component of the noise and the cerebral cortex serves for its conscious recognition. With each person there is a readiness of the tinnitus hearing system which is suppressed in our brain unconscious. Neuronal activity leading to tinnitus can occur in the nervous system with and without ear involvement due to the diverting of hearing information. The tinnitus is misreading our hearing impairments in the CNS and it is more common in males than in females, it is more common in people with higher education, and most commonly between 50 and 60 years of age. Research has shown that in 80% of these "patrons" the intensity of the noise does not exceed the limit of 20 dB above the hearing threshold and that it usually registers at a frequency of 500-8000 Hz.

There is a subjective, objective, primary and secondary noise, one-sided, double-sided, acute, chronic, permanent, occasional, pulsating, subtle, tweet, etc. In the course of tinnitus, it can be progressive, static, fluctuating, continuous, and intermittent. Somewhere around 5% of the general population complains about daily noise and 20% on the occasional. If it is a double hearing loss, the noise more often affects a better ear. More than half of people who have noise in the ear have some hearing impairment. It has been observed that tinnitus, in people with normal hearing, leads to a higher degree of anxiety, anxiety, depression, etc. Also, an increase in the emotional response to tinnitus can lead to progression in the intensity of the noise. That's why about 35% of patients with tinnitus continuously use sedatives. Over 25% of patients cannot find the right term to describe their murmur. It is thought that in Serbia, about a million inhabitants suffer from some form of noise in the ear.

Causes of this Unpleasant Symptom may be different Pathological Processes

Cerumen and foreign bodies in the external ear canal that touch the musculoskeletal, middle ear / middle ear infections, thympano sclerosis, otosclerosis, etc.), internal ear disorders (Meniere disease, labyrinth toxicosis, syphilis, etc.), damage to hearing ailments, nerves and central hearing cords in the CNS (acute and chronic acute trauma, presbiacus, brain disorders), tumors (neuron acusticus), head trauma, epilepsy, multiple sclerosis, use of ototoxic and other drugs, etc. The diagnosis of the noise includes a clinical examination with a number of functional oto-neurological tests, recording rtg, audiometry, tympanometry, tinnitusmetry, BERE, CT, NMR heads, Doppler of blood vessels of the neck, etc. In the treatment of acupuncture, it was tried using various methods and numerous pharmaceutical preparations, but the results were often not more successful than the placebo effect. Tinnitus is not a disease but a symptom and therefore does not have a unique therapy for its treatment. The therapeutic procedures include the following: hearing aids in hearing impaired persons, sound therapy, tinnitus masker, sound pad, laser (bio simulative laser 10 treatments for 20 minutes), medications (vasoactive substances, sedatives, tricyclic antidepressants, valium, vitamin B, zinc supplements,

etc.), acupuncture, hypnosis, hyperbaric chamber, transcranial magnetic stimulation, intratampanal dexasone application, PM-101 amp, AM-101, behavioral therapy, retraining technique, etc.

The aim of the paper is to present our results of treatment of chronic unilateral tinnitus in patients with perceived hearing impairment:

a) Transtimpanic administration of dexasone.

b) Multi-month treatment of acupuncture with vasoactive substances in combination with antidepressants.

c) Acupuncture.

Material and Methods of Work

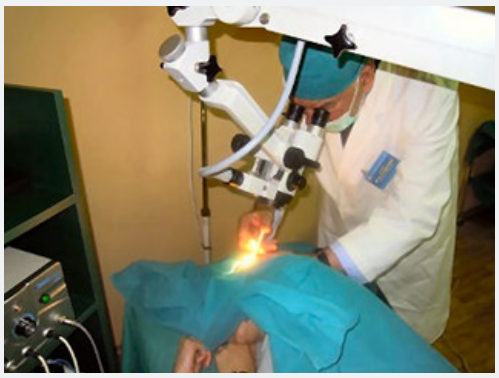

Figure 1: Intrastimpanic dexasone administration.

In the period from 2014 to 2017, the study included 56 patients treated for tinnitus, as a primary symptom, associated with perceptual reduction in low-grade hearing. The youngest patient was 27 and the oldest 67 years. In 24 cases, a medication therapy lasting more than three months was carried out, 12 patients were treated with acupuncture, and in 20, dexasone was administered transtimpancally in the middle ear through four sessions in a five-day interval. The effect of the therapy was controlled based on the VAS scale before and after the three-month treatment and the patient's testimony (Figure 1).

Results

The best results were achieved after intratympanic dexasone administration in people whose tinnitus had the characteristic of noise and was of cochlear origin. In 35% of treated patients, lesions completely disappeared, in 20% significantly decreased, while in 44% it remained the same, and in about 5% treated it even increased (Figure 2).

Discussion

Tinnitus is wrongly processing our hearing impulses in the CNS. The hypothalamus and limbic system are responsible for the emotional component of the noise, while the cortex of the great brain serves for its conscious recognition. It can occur in completely healthy people and people with normal hearing. There is no correlation between the intensity of the noise and the degree of patient's suffering [1,2]. A neuronal activity that leads to tinnitus can occur in the nervous system with and without the involvement of the ear due to the diverting of hearing information. With each person there is a readiness of the tinnitus hearing system which is suppressed in our brain unconscious. Tinnitus is a subjective phenomenon that is difficult to assess objectively because it is measured only based on the patient's response. The Transtimpanic administration of dexasone in the treatment of tinnitus, which was injected by Sakata and associates in 1982 and [3,4] in the treatment of cochlear tinnitus, led to over 70% significant improvement. Approximately similar results were achieved by Hyun [5] whose success of satisfied patients ranged around 64%. Comparing our results with the results of these authors, we were convinced that the success of treating acupuncture with this method is significantly weaker in us. As a reason, Vukoje lists various criteria in assessing the success of this method, patient selection, the etiology of noises, etc. The principle of treating an intratemal steroid in the middle ear is based on the reduction of edema and excitation of the auditory cells. Stimulating the metabolism of the auditory cells and altering the chemical reaction of the lymphoma in the inner ear of dexamethasone also blocks the increased formation of neurotransmitters (glutamate) in the cochlea in persons with hearing impairment and increases microcirculation in the inner ear which is imperative in the treatment of cochlear tinnitus. The use of this corticosteroid is locally indicated in cases when medication therapy did not produce results. Moreover, the local application of this medication in the middle ear does not have systemic bipolar effects and a high concentration of steroids is achieved through a round window in the inner ear.

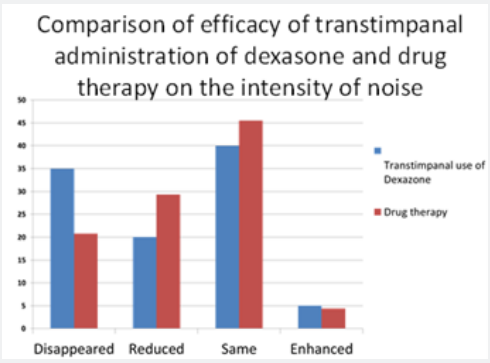

Figure 2: Multi-month medication therapy in patients with tinnitus and mild hearing impairment resulted in the elimination of tinnitus in 20.8% and a reduction in the intensity of the noise in 29.3%. Acupuncture at the time of treatment resulted in the alleviation of the symptoms in 4 patients (33.3%) to make the noise later recidivated by all.

Medication therapy consists of the application of vasoactive drugs, vitamins, antidepressants, and some supplements (magnesium, zinc, selenium) [6]. According to our research, this type of treatment has given a weaker result, in terms of noise disappearing, compared to Transtimpanic dexasone use, and better in terms of noise reduction. Over 29% of the treated people reported that the noise decreased by 50% after three months of treatment. Acupuncture has led to a reduction in the intensity of forests only during the period of administration,

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which means that this method is not an effective treatment for tinnitus, although Bahran and associates [7] conclude that acupuncture can help to relieve tinnitus. In patients in whom the therapy did not deliver satisfactory results, laser therapy or tinnitus management should be included [8,9].

Tinnitus Pen GREEN medical Laser uses low-level laser therapy to modify the function of cells where the main mechanism occurs in mitochondria [8]. It is applied once a day for 20 minutes, 10 minutes in front of the ear,10 minutes behind the ear. In the case of bilateral tinnitus, a break of three hours before the application to another ear is necessary. The therapy usually lasts 90 days. In most cases, improvement occurs after a couple of weeks. In the case of chronic tinnitus, more than one session may be required [8]. Tinnitus management means various ways to overcome this condition including: Ignore it and gain control over it; do something; do not just think about it; avoid high volume music and strong noise; stop consuming nicotine, caffeine and alcohol; do not isolate; and devote more to sports and work activities with relaxation exercises, behave as if there is no buzzing, and so on.

Conclusion

Our experience suggests that in tinnitus with cochlear hearing impairment there is justification of the application of the Transtimpanic application of dexasone, and in patients with retrochronal hearing impairment associated with noise, which has the character of the tone, the advantage is given to medication therapy. Acupuncture exclusively at the time of treatment led to subjective mitigation of the intensity of noise in a third of patients, so that soon after the cessation of the procedure, it would be recidivated in all noise. For young people, as well as for those with longer duration of the noise, the success is weaker. Patients with proper hearing and tinnitus of unknown origin require a consultative collaboration of several specialists in which psychologists and neuropsychiatrists should be involved. The author believes that it is necessary to develop more precise criteria for monitoring the success of treatment and the choice of medication and other therapy in the treatment of this unpleasant symptom.

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