



The Innovative Generator of The Magnetic Field in Tinnitus Treatment

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Editorial

Attempts to use the magnet in medicine have already taken place in antiquity, and thanks to the progress of science and technology, pulsed magnetic field has been used in medicine since the nineteenth century. In relation to tinnitus, the magnetic field was applied after observation of resolution or reduction of auditory hallucinations in patients with schizophrenia treated by transcranial magnetic stimulation. Another premise for applying the magnetic field in the treatment of tinnitus (or auditory phantom perception) is its beneficial effect in the treatment of phantom pain.

Thanks to the use of small-size and point applicators, high magnetic induction values are obtained. Therefore, by constructing an innovative small-sized inductor, which can be placed in the close vicinity of the cochlea, we provide conditions for optimal concentration of the magnetic field at the most probable site responsible for the perception of tinnitus.

The aim of the study was to evaluate the effectiveness of subjective tinnitus treatment in patients with sensorineural hearing loss of cochlear origin using the magnetic stimulation of the ear using a prototype device for electro-magnetostimulation of the ear.

The research was conducted in 20 patients (24 ears) with tinnitus, aged 30 years to 74 years (mean 62.5 years), including 8 women and 12 men. Bilateral tinnitus occurred in 8 people, and in 12 patients unilateral (left-sided in 7 and right-sided in 5 people), of which permanent in 16 ears and temporary in 6 ears.

Typical audiological and imaging diagnostics were performed depending on the indications. Before the treatment, immediately after the end of treatment and after 3 months, tinnitus was assessed in the VAS scale (Visual Analogue Scale for loudness). In analogous periods, hearing in pure tone audiometry was evaluated.

The treatment cycle included 10 five-minute stimulations performed daily 5× a week. The stimulation coil of the prototype device for electro-magneto stimulation was placed in the external auditory canal.

Immediately after the end of treatment the following results were obtained: in 18 ears (75%) improvement (reduction of tinnitus in the loudness by 50% to 85%); in 2 ears (8.4%), the tinnitus completely subsided; in 8 ears (33.3%) periodical tinnitus recurrence was obtained; in 4 ears (16.6%) the tinnitus has not changed; none of the subjects was diagnosed with worsening of symptoms.

The nature of tinnitus was as follows: before treatment - permanent in 20 ears and temporary in 4 ears; immediately after treatment - permanent in 10 ears, temporary in 12 ears and disappearance of tinnitus in 2 ears; 3 months after treatment - permanent in 8 ears, temporary in 14 ears and disappearance of tinnitus in 2 ears. Based on the VAS for loudness: before treatment 4.9 points; after treatment 2.0 points and after 3 months 1.8 points.

Preliminary results of the study indicate a high efficiency of magnetic stimulation in the treatment of tinnitus using a prototype device for electro-magneto stimulation of the ear. There was no negative effect of stimulation on hearing and tinnitus.

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