

# Hyperbaric Oxygenation in the Complex Treatment of Sensorineural Hearing Loss

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**Annotation:** The role of hearing is difficult to overestimate. Its decline or complete loss is a medical and social problem. Sensorineural hearing loss is one of the most serious diseases requiring comprehensive and timely therapy. Among the causes leading to the development of sensorineural hearing loss are the actions of infectious agents, toxins, the presence of concomitant diseases (diabetes mellitus, hypertension, chronic renal failure, impaired cerebral circulation, etc.), as well as the effects of traumatic factors (mechano-, acu-, vibro-, barotrauma, etc.). With all the variety of etiological factors, hemodynamic disorders recorded at an early stage in the vertebral-basilar basin play an essential pathogenetic role. Purpose: to establish the effectiveness of the use of HBO in the complex treatment of sensorineural hearing loss.

**Keywords:** hyperbaric oxygenation, sensorineural hearing loss, audiological examination.

The resulting angioedema changes lead to impaired delivery of oxygen, enzymes, hormones and other substances necessary for neuroepithelial metabolism. Lack of oxygen in liquids The labyrinth caused by the vascular factor is an essential component of pathogenesis. Active metabolism is mainly carried out in the vascular strip, the spiral organ and the spiral ganglion. Metabolic disorders lead first to loss of function, and then to the death of hair cells. It follows from the above that one of the main goals in the treatment of sensorineural hearing loss is to reduce hypoxia in tissues. To do this, drugs are prescribed that stabilize cell membranes, improve hemorheology and venous outflow from the cranial cavity (cavinton, trental, tanakan, ginkorn fort, mexidol, curantil, etc.), as well as various physical treatments, which include hyperbaric oxygenation (HBO). This is a method of applying oxygen under high pressure for medicinal purposes. The method is based on increasing the oxygen capacity of the body's liquid media. Hyperbaric oxygen therapy is a well-established method of treating non-healing wounds, radiation damage, as well as various hypoxic or ischemic phenomena (such as carbon monoxide poisoning, infections, etc.). In recent years, more and more data from preclinical and clinical studies have demonstrated the effectiveness of HBOT in neurological indications, including idiopathic sudden sensorineural hearing loss, post-stroke and post-traumatic brain injury, central sensitization syndrome. such as fibromyalgia syndrome and age-related cognitive decline and models of Alzheimer's disease. The article discusses the effects of hyperbaric oxygenation. The problem of finding and applying effective short-term therapies that increase the effectiveness of the prevention and treatment of sensorineural hearing loss remains very relevant in medicine. In this regard, the use of methods such as hyperbaric oxygenation should be attributed to promising areas in medicine. Barotherapy has proven its effectiveness in the complex treatment of SNHL. Hyperbaric oxygenation in neurosens hearing loss can take its rightful place. Hyperbaric oxygenation is treatment with high blood pressure without changing the oxygen concentration in the chamber. The use of hyperbaric oxygenation with a small excess pressure (pressure values do not exceed 1.15-1.3 ATA) activates the formation of ATP molecules in the mitochondria - the biological energy of the cell. ATP molecules are necessary for the normal course of all biochemical processes in the cell, including mitochondrial replication. As a result of such an impact, a number of important processes are triggered that cause its positive effect on metabolism, in particular, on autoimmune processes;

**Materials and methods** In the period from 2023 to 2024, 44 patients diagnosed with sensorineural hearing loss were examined on the basis of the Samarkand City wellness Center in Samarkand on the

OXYHELP INDUSTRY machine. Among them are 20 men and 24 women aged 32 to 76 years. All patients underwent an audiological examination (tonal threshold, speech audiometry), blood pressure monitoring, as well as a study of the lipid profile and rheological parameters of the blood. Based on the medical history, clinical research data and the program approved by us The following groups of patients were identified for treatment: group 1: patients diagnosed with acute sensorineural hearing loss (ONT)- 22 people; 12 of them received basic medical treatment in combination with HBO; 10 people in whose treatment only HBO sessions were used; group 2: patients diagnosed with chronic sensorineural hearing loss (CST)- 22 people; of these, 12 people received basic medical treatment in combination with HBO; 10 people in whose treatment only HBO sessions were used. Basic drug therapy, with a course of 10 days, was carried out according to the following scheme: Piracetam 20% 5 ml intravenously 1 time per day; Cavinton 0.5% 2 ml intravenously, diluted in 200 ml of saline solution; Nicotinic acid 1% 1 ml intravenously 1 time per day; Vitamin B1 2.5% 1 ml / m every other day, alternating with vitamin B6; Vitamin B6 5% 1 ml / m every other day, alternating with vitamin B1. HBO, a course of 10-12 sessions, was carried out in pressure chambers "Yenisei"-3 and BLKS-301M (Table 1.). Results At the end of the course of treatment After treatment, the patients who were under observation were re-examined. The results were summarized and the averages were calculated. We have established the following criteria for evaluating the effectiveness of treatment [7]: 1. Reduction of the threshold of sound perception; 2. Reduction of ear noise; 3. Increased speech intelligibility. Of the 17 patients diagnosed with acute sensorineural hearing loss (group 1), 10 people received complex treatment (HBO in combination with basic drug therapy) . As a result, a decrease in the threshold of sound perception was noted in 8 out of 10 patients (80%); a decrease in ear noise and an increase in speech intelligibility were observed in 9 people (90%). With isolated use of HBO, the results were as follows: out of 7 people, 4 (57%) had a decrease in the threshold of sound perception, a decrease in ear noise and an increase in speech intelligibility were observed in 71% of cases (5 people). In the 2nd group, consisting of 22 patients diagnosed with chronic sensorineural hearing loss, with complex treatment (HBO in combination with basic drug therapy), which 12 people received, a decrease in the threshold of sound perception was noted in 11 patients (78%); a decrease in ear noise and an increase in speech intelligibility was observed in 11 people (92%). With the isolated use of HBOT in the treatment of patients in this group, the results were as follows: out of 22 people, 19 (53%) there was a decrease in the threshold of sound perception, a decrease in ear noise and an increase in speech intelligibility were observed in 68% of cases (13 people). A comparison of treatment results in groups 1 and 2 showed that HBO is most effective in the complex treatment of sensorineural hearing loss. Discussion It can be assumed that HBO, as a method of treating sensorineural hearing loss, gives a greater effect in combination with basic drug therapy. The best results were obtained in acute forms of the disease, which is pathogenetically justified. In chronic sensorineural hearing loss, the use of HBO in complex treatment is also quite justified. Conclusion Thus, the subjective improvement in the condition of patients, the positive dynamics of audiological tests allow us to recommend hyperbaric oxygenation to patients with sensorineural hearing loss against the background of conventional pharmacotherapy.

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