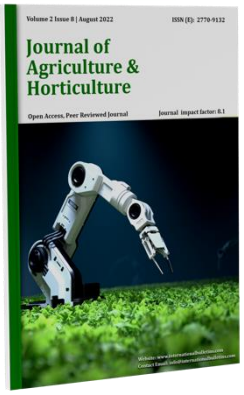

EVALUATION OF THE EFFECTIVENESS OF TREATMENT OF PATIENTS WITH ACUTE SENSORINEURAL HEARING LOSS

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Abstract

The article describes the results of treatment of patients with acute sensorineural hearing loss of different age groups. The results of hearing restoration depending on the cause of neurosensory disturbance, the timing of treatment and the ways of introducing glucocorticosteroidswere analyzed.

Key words: Acute sensorineural hearing loss (ASNHL), tonal threshold audiometry (TTA), glucocorticosteroids (GCS).

Аннотация. В статье описаны результаты лечения больных с острой нейросенсорной тугоухостью в разных возрастных группах. Результаты восстановления слуха анализировали в зависимости от причины нейросенсорного расстройства, времени обращения больного и способов введения глюкокортикостероидов.

Аннотация. Мақолада турли ёш гуруҳларида ўткир нейросенсор оғирқулоқлик қайд этилган беморларни даволаш натижалари баён этилган. Нейросенсор бузилишни келтириб чиқарган сабаб, беморнинг мурожаат этиш вақти ва глюкокортикостероидларни қўллаш усулларига қараб эшитиш қобилиятининг тикланиш натижалари таҳлил этилди.

Калит сўзлар: нейросенсор оғирқулоқлик (НО), тонал бўсағали аудиометрия (ТБА), глюкокортикостероидлар (ГКС).

Introduction: The problem of sensorineural hearing loss (SNHL) has been relevant for many decades. Every year, in the context of increasing urbanization, accelerating the pace of life, increasing exposure to toxic factors of the environment and industry, noise and vibration, as well as an increase in the proportion of cardiovascular diseases, the number of patients with SNHL is growing [1,4]. Despite the introduction of advanced technologies in the field of diagnosis, treatment and rehabilitation of patients with hearing impairment, the mechanisms of etiopathogenesis of this disease have not been fully studied, and the search for new, more effective drugs and their combinations for the treatment of this pathology is still ongoing. According to various sources, from 1% to 6% of the world's population suffers from severe hearing loss, with the prevalence of sensorineural hearing loss prevailing and reaching 75-95% [1,3,5]. NO is more common in people of working age, for whom the social disadvantage associated with hearing loss can significantly reduce the quality of life, limit the performance of usual duties, and even force them to change their type of work.

NO often occurs as a result of impaired blood circulation in the inner ear system due to vascular pathology, the toxic effects of viral infections, allergic and inflammatory edema, and is accompanied by a decrease in the level of oxygen in the tissues and metabolic disorders in the neuroepithelial cells of the cochlea. Under conditions of hypoxia, the level of free radicals

increases, which allows the activation and release of lytic enzymes that damage cell membranes, resulting in the destruction of various components of nerve cells. Long-term ischemic foci of nerve fiber contribute to its atrophy and subsequent replacement with connective tissue. Therefore, it is necessary to quickly eliminate the damaging effects of hypoxia and inflammation in the inner ear system, as well as improve the delivery of oxygen and nutrients to the damaged area, which will prevent the development of persistent and irreversible changes in the receptor apparatus [2,4].

To date, a large number of drugs, regimens and non-drug methods of treatment are used for the treatment of NO. Treatment with glucocorticosteroids (GCS) is considered the most rational and effective, since they are the strongest natural antioxidants and quickly stop swelling and inflammation due to vasoconstriction and reduction of the exudative and proliferative phases of inflammation, which is especially important in the closed bony cavity of the inner ear [3]. The effectiveness of hyperbaric oxygenation (HBO), which allows to compensate for oxygen deficiency in conditions of impaired general and local blood flow, has been proven. In the treatment, it is very important to restore microcirculation and improve the rheological properties of blood, as well as to regulate hemodynamics in the vertebrobasilar basin, for this purpose, drugs and physiotherapeutic methods that affect microcirculatory flow, which are one of the important pathogenetic components of the treatment of NO, are successfully used. To normalize metabolic processes in the eardrum, MAT metabolites, antihypoxants and antioxidants, vitamin complexes are used [1,4,5].

Materials and methods:

We have experience in treating 369 patients over 18 years of age with acute sensorineural hearing loss. The number of women observed with sensorineural hearing loss (NO) was 186 (210 ears), men 183 (203 ears), bilateral process was noted in 46 people (20 men and 24 women). In our study, 413 cases were analyzed, which corresponded to the number of affected ears.

The average age of the observed patients was 47.10±13.53 years. The total number of cases was divided into age groups according to the WHO classification. Middle-aged patients (45-60 years) predominated, detected in 191 cases, young patients (20-45 years) - in 153 cases, in the elderly age group (60-75 years) NO was noted in 69 cases. In order to more thoroughly analyze the most common causes of this disease, as well as the nature of its course and recovery, patients were divided into age groups.

The inclusion criteria for the study were: neurosensory type of audiometric curve with an increase in the threshold of sound perception at speech frequencies by more than 26 dB, the duration of the disease did not exceed 1 month. Patients with middle ear pathology, intracranial formations of the brain and cerebellar-pontine angle, oncological diseases, pregnant women, as well as patients with acute sensorineural damage with an increase in the threshold of sound perception up to 26 dB were not included in the study.

All patients underwent audiological examination at the beginning of treatment and after the full course of treatment: acumetry, impedanceometry and tonal threshold audiometry. The degree of severity was determined by the average values of sound perception thresholds at frequencies of 500, 1000, 2000 and 4000 Hz according to WHO classification. The 1st level of severity corresponds to an increase in the threshold by 26-40 dB, the 2nd level by 41-55 dB, the 3rd level by 56-70 dB, the 4th level by 71-90 dB, an increase in the perception threshold by 91 dB is practical deafness. came true.

During hospitalization, all patients noted a decrease in hearing, which in 73.61% of patients was accompanied by a blockage of the affected ear, in 96.61% of cases, noise of various nature was observed, 25.91% of patients complained of dizziness and vestibular disorders (14.77%). During the observation period, patients underwent a general clinical laboratory examination, were examined by a neurologist, an ophthalmologist, and underwent the necessary examinations. In case of suspicion of intracranial formations, vascular pathology, an X-ray examination of the temporal bones and an MRI of the brain were performed.

Results and discussion:

During the study, in different age groups The time of patient referral from the onset of the disease was determined (Table 1). The table shows that the most socially active patients of working age, that is, young and middle-aged patients (groups 1 and 2), sought specialized care earlier than older patients.

Table 1. Duration of hospitalization for treatment of patients of different ages

Application time	1 group	2 group	3 group	Total no
7 кунгача	96(62,75%)	100(52,37%)	32(46,38%)	228(55,20%)
14 кунгача	31(20,26%)	49(25,65%)	24(34,78%)	104(25,18%)
21 кунгача	23(15,03%)	29(15,18%)	9(13,04%)	61(14,78%)
1 ойгача	3(1,96%)	13(6,80%)	4(5,80%)	20(4,84%)
Жами:	**153 (100%)**	**191(100%)**	**69(100%)**	**413(100%)**

When collecting anamnesis, the most likely causes of acute neurosensory disorders were identified. The most common cause of the development of NO was vascular disorders (46.01% of cases). Complaints against the background of high blood pressure appeared in 28.33% of patients, high blood pressure most often caused NO in the 2nd and 3rd age groups and amounted to 39.27% and 40.57%, respectively, in group 1 this figure amounted to 20.75% of all observations, hypotension was noted in 3.38% of the total number of patients. Acute hearing impairment with a short-term increase in blood pressure after the stress was more often observed in patients of the 1st and 2nd age groups, it was 14.38% and 15.10%, respectively. During subsequent examinations, diseases of the cardiovascular system of various nature were detected in 75.67% of patients, including ischemic heart disease and atherosclerosis of the cerebral vessels, arterial hypertension, circulatory disorders in the vertebrobasilar system, dyscirculatory encephalopathy, vegetative-vascular dystonia, hypotension, diabetes mellitus and diabetic angiopathy, etc.

The second place in the development of NO is occupied by the passed acute respiratory viral infections (ARI), which accounted for 21.31% of the total number of patients. No statistical differences were found in the incidence of NO in different age groups after ARVI. In our study, idiopathic hearing loss accounted for 18.46% of cases, and even after a comprehensive examination, it was not possible to identify the possible cause of the disorder. Most often, such cases were observed in 1st and 2nd age groups, respectively, in 22 (37.2%) and 29 (24.61%) people, including immediately after waking up in 15.12% and 4.11% of cases. 8.2% of all observations corresponded to the share of acute hearing impairment against the background of acoustic and barotrauma. The remaining cases of NO were 6.02 (Figure 1).

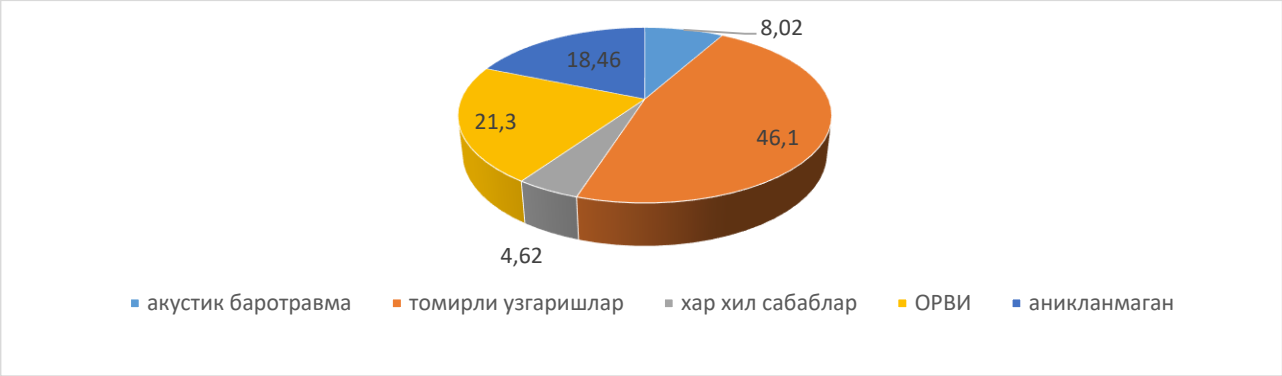

Figure 1. Possible causes of NO occurrence

In the structure of severity, the 1st degree of severity prevailed in all age groups, but the share of severe 3-4 degree of severity in the general structure was significant: in the 1st group - 37.90%, in the 2nd group - 36.65%, in the 3rd group - 34, 78%. In patients of groups 1, 2, and 3, 60.13%, 64.4%, and 61.52% of patients, respectively, had a pronounced level of hearing impairment (Fig. 2).

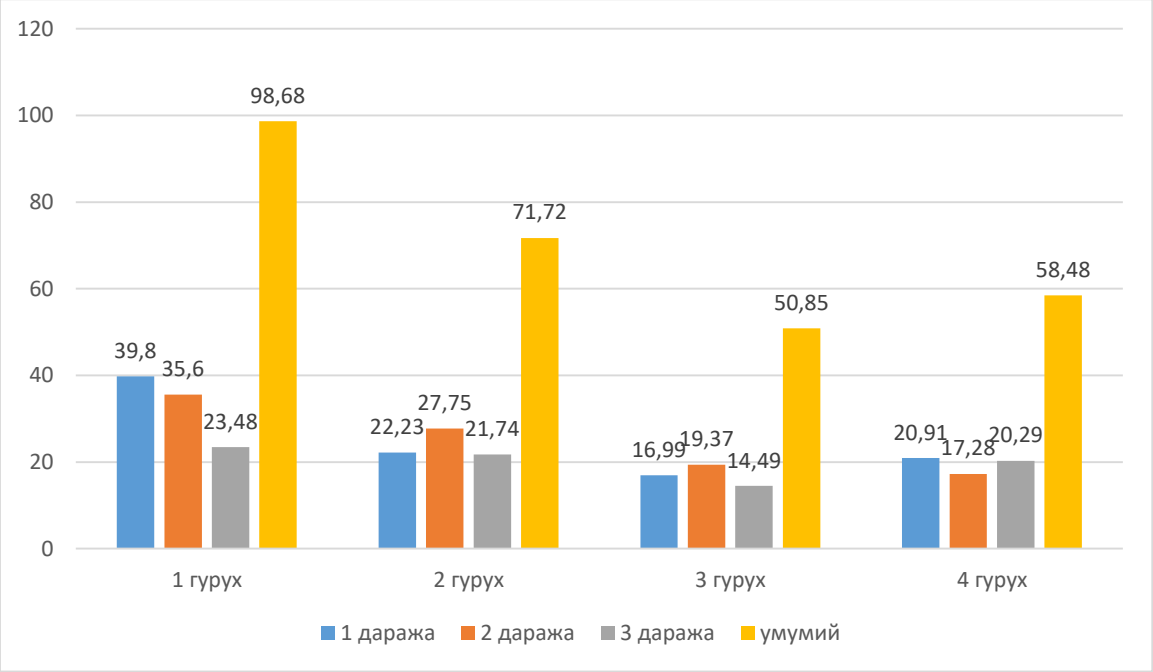

Figure 2. Distribution of patients by severity in different age groups

All patients with NO were treated in accordance with the basic principles of treating patients with this pathology: immediate hospitalization in a specialized hospital or day unit, immediate initiation of complex therapy. The goal of treatment is to restore hearing to the age norm or significantly improve it by lowering the thresholds of perception, especially in the speech frequency ranges of 500-1000-2000-4000 Hz, reduce the intensity of noise or get rid of it, and eliminate vestibular disorders.

In our study, comprehensive treatment included:

- Dehydration therapy (mannitol)
- Microcirculatory drugs (pentoxifylline, piracetam)
- Glucocorticosteroids (dexamethasone)
- Antioxidants and MAT metabolites (emoxipin, mexibel, cytoflavin)
- Antihistamines (betaserc)

• GBO, acupuncture reflexology, physiotherapy.

The results and success of hearing-improving therapy are determined by the timing of treatment initiation, an integrated approach to drug administration. In the treatment of NO, we actively used GCS as a powerful natural antioxidant and anti-inflammatory agent (in 79.66% of cases), for this purpose we used a solution of dexamethasone in parenteral form at the rate of 0.1 mg per 1 kg of body weight for an average of 5 days. The drug was not used in patients with contraindications to systemic administration of hormones and severe somatic pathologies. We also used the intratympanic method of administration of GCS to 92 patients with NO of different age groups. In our study, hearing improvement was noted in 305 (73.85%) cases, of which in 253 (61.26%) hearing corresponded to normal values and grade 1 deafness, in 125 (30.27%) cases normal thresholds of sound perception were achieved. The rates of hearing recovery in men and women were approximately the same. In 25.67% of cases, no changes in hearing thresholds were observed, and in 2 patients, a decrease in hearing was observed against the background of the treatment. Reduction of noise intensity and relief from it was found in 81.60% of cases, tinnitus completely disappeared in 68.75%, vestibular manifestations and dizziness were preserved in 5 and 6 people, respectively, after the course of treatment, and the treatment was continued in an outpatient setting.

Hearing recovery was analyzed in a set of common observations depending on the cause. The following results were obtained: after the conducted ORVI, various degrees of improvement of hearing occurred in 90.91% of cases, in 79.55% of cases the sound perception thresholds corresponding to the normal hearing level and the 1st degree of severity were reached. In patients with vascular pathology, the recovery was worse, that is, in 64.9% of cases, the level of hearing corresponding to the 1st level of severity and the level of normal perception of sound were noted in 50.33%. In the case of ONO associated with acoustic and barotrauma, hearing improvement was observed in 82.05% of cases, in the case of idiopathic deafness with an unspecified nature of the disorder, improvement occurred in 73.50% of cases.

An analysis of the treatment of patients who sought help late, that is, more than 2 weeks, was conducted. In the group of young patients, hearing did not change in dynamics against the background of complex treatment in 38.46% of cases, among them 3-4 degrees of deafness were observed in 19.23%. In the middle-aged group, the number of unsatisfactory treatment results was equal to the number of cases of hearing improvement, but it is worth noting that in patients with severe hearing loss, hearing remained unchanged in dynamics. In elderly patients, no improvement was observed in 46.15% of cases, and 30.77% of cases were severe hearing loss.

We compared the average values of sound perception thresholds at speech frequencies in different age groups at the beginning of treatment (BO'Q1) and after complex therapy (BO'Q2), and then we evaluated the degree of improvement of hearing thresholds by the difference of average values (BO'QYa=BO'Q1-BO'Q2). (Table 2) According to the data of the table, it can be seen that the reduction of hearing thresholds was similar in all age groups at the same average frequency.

Table 2. Average value of sound perception thresholds at speech frequencies of patients with NO before and after treatment in different age groups

Frequency Group	500 Гц	1000Гц	2000Гц	4000Гц
1-гур., БЎҚ1	42,91 ±27,23	63,74±27,33	65,93±23,81	66,93±23,92
1-гур., БЎҚ 2	29,42 ±25,96	43,45±30,53	49,37±31,65	54,76±39,65
1-гур., БЎҚ Я	13,49 ±26,54	20,29±28,93	16,61±7,84	12,17±28,93
2-гур., БЎҚ 1	40,09 ±25,89	62,63±26,89	64,16±33,22	62,21±20,19
2-гур., БЎҚ 2	29,08 ±25,39	42,63±29,69	44,84±27,48	49,40±12,81
2-гур., БЎҚ Я	12,00 ±26,54	19,96±29,02	16,28±27,76	12,17±31,74
3-гур., БЎҚ 1	42,78 ±27,30	42,78±27,3	42,78±27,3	42,78±27,3
3-гур., БЎҚ 2	29,60 ±26,16	42,78±27,3	42,78±27,3	42,78±27,3
3-гур., БЎҚ Я	13,18 ±26,73	18,78±28,95	16,33±27,68	11,92±31,60

In addition, we analyzed the average hearing thresholds before and after treatment of patients with NO who underwent a course of intratympanic administration of dexamethasone in combination with conventional therapy. We compared the results obtained with the results of treatment of the general group in the observation period. The data are presented in Figure 3.

Note: The index "D" indicates the group of patients who received intratympanic administration of GCS.

Thus, it is clearly seen that with intratympanic administration of GCS, a more significant decrease in the thresholds of sound perception at all frequencies occurred.

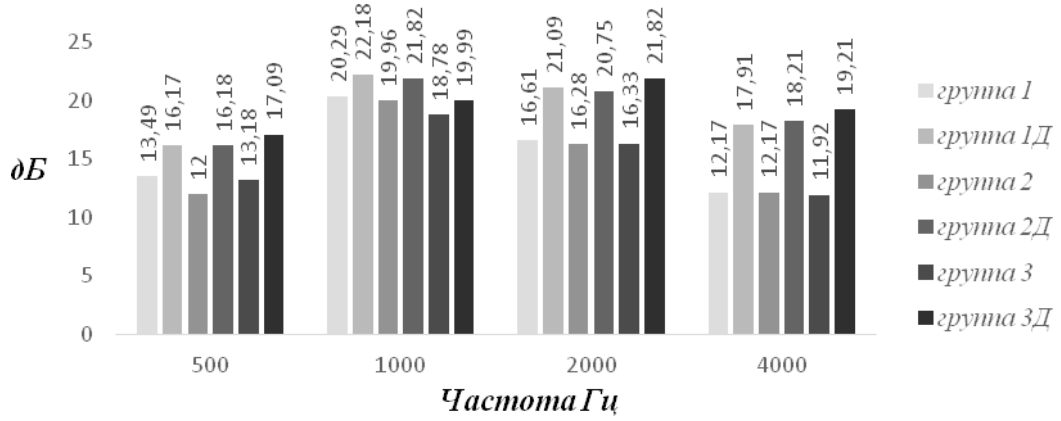

Figure 3. Average values of hearing improvement thresholds in different age groups.

Conclusion:

• The results of treatment of NO depend on the time of initiation of complex therapy

• The following are unfavorable prognostic factors for the restoration of normal hearing function: severe degree of deafness, vestibular disorders, vascular risk factors.

• The use of GCS in the treatment of NO, both systemic and local (intratympanic), is pathogenetically justified.

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