

## MODERN DIAGNOSTIC METHODS FOR NYSTAGMUS IN MINER'S DISEASE

<sup>1</sup>Esanov Aslbek Alisherovich; <sup>2</sup>Murodova Nigina Shuxrat qizi;

<sup>3</sup>G'aniyev Dostonbek Nurali o'g'li

<sup>1,2,3</sup>Samarkand State Medical University, Department of Otorhinolaryngology No. 1, 1st year  
clinical residents

Scientific supervisor: **Davronova G.B**

Samarkand State Medical University, Department of Otorhinolaryngology No. 1

PhD, Associate Professor.

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**Research objective:** Morbus Menera or Meniere's disease is a rare disorder of the inner ear. According to scientific studies, it is characterized by a violation of the absorption of fluid in the middle ear and, as a result, the accumulation of a large amount of endolymph in it. Since the middle ear is covered with a skin membrane, the fluid can spread over its surface in a limited space.

This leads to an increase in pressure in the middle ear and partial damage to the cochlea. As a side effect of Meniere's disease, patients sometimes experience nystagmus - the inability to focus their gaze on certain objects, which contributes to the violation of vestibular function. In the intervals between attacks, there are no symptoms of the disease, such as dizziness and balance. In addition, vegetative symptoms, such as tachycardia or excessive sweating, may occur.

### Introduction

During attacks of the disease, a sharp decrease in hearing occurs due to damage to the inner ear. At the same time, hearing can often change: it can sometimes worsen, then recover after a while. Long-term treatment of the disease often leads to unilateral, and sometimes complete, deafness.

### Signs :

- The acute form of the disease is characterized by classic symptoms:
- dizziness
- impaired motor coordination
- nausea and vomiting
- Hearing impairment: unilateral hearing loss with dizziness, a sensation of noise and ringing in the affected ear.

### Causes and risks

There is a theory that this disease is caused by a hereditary factor, since it occurs in some family members in the form of certain anatomical features of the hearing organs and vestibular apparatus, for example, deviations in their structure. It is believed that such developmental anomalies can cause Meniere's disease. In some cases, it is believed that the disease manifests itself as a result of damage to the inner ear.

Other possible causes of Meniere's disease include adverse environmental factors (for example, increased noise levels), viral infections, and circulatory disorders. The causes of Meniere's disease are not yet known.

### Materials and Methods

The most important principles in diagnosing Meniere's disease are a careful analysis of the patient's medical history and a detailed description of the symptoms.

A diagnosis of Meniere's disease can be made if a patient has at least two spontaneous attacks of severe vertigo lasting at least 20 minutes, accompanied by a sensation of pressure and tinnitus, or without tinnitus. In addition, hearing loss is detected using audiometric tests. Other methods of diagnosing the disease include:

To exclude acoustic neuroma of the auditory nerve, magnetic resonance imaging is performed using a contrast agent and T2 weighting. As a side symptom of Meniere's disease, patients sometimes experience nystagmus - the inability to focus their gaze on certain objects, which contributes to the violation of vestibular function. In the intervals between attacks, there are no symptoms of the disease, such as dizziness and balance. In addition, vegetative symptoms such as tachycardia or excessive sweating may occur.

Electrocochleography: a test to check the functioning of the hair cells of the organ of Corti by recording electrical impulses from the cochlea and auditory nerve. Changes in amplitude and duration can confirm the abundance of endolymph in the inner ear and its increased pressure;

audiometry: conducting a number of necessary tests to study hearing and determine the limits of discomfort and auditory adaptation: SISI test, Fowler test, glycerin test, Weber tuning test to determine the lateralization of sound on the side of the healthy ear, BERA test (Brainstem Evoked Response Audiometry) - a study of the response of the auditory nerve and brainstem.

A sharp decrease in hearing during attacks of the disease occurs due to damage to the inner ear. At the same time, hearing can often change: it can sometimes worsen, then recover after a while. A long course of the disease often leads to unilateral, and sometimes complete, deafness.

### **Results**

Since the causes of Meniere's disease are unknown and there is no simple cause-effect therapy, treatment mainly consists of eliminating the symptoms of the disease. In this case, it is necessary to distinguish between the treatment and prevention of acute attacks. In addition to some medications, surgical procedures can also be used for symptomatic treatment. To relieve symptoms during acute attacks, anti-vertigo drugs and anti-nausea drugs are used. In some severe cases, the doctor prescribes intravenous medications. In case of severe vomiting, the loss of fluid and electrolytes from the body must also be compensated for by intravenous infusions. If the attacks are frequent and severe, long-term treatment is recommended at certain intervals. The use of the active substance betahistine helps to reduce the number of attacks of dizziness, but, in fact, a complete cure for Meniere's disease has not yet been observed.

If conservative treatment methods do not have a positive effect, as a last resort, you can resort to partial removal of the structures of the inner ear. To perform this procedure, an antibiotic (usually gentamicin) or a local anesthetic is injected directly into the middle ear through the eardrum.

Vertigo can also be treated surgically, in which the vestibular branch of the VIIIth nerve is cut. This surgery causes hearing loss in the affected ear, so this procedure can only be used in cases of complete deafness. An alternative method is sacculotomy - drainage of the

endolymphatic sac - to improve the absorption of endolymph and reduce pressure in the inner ear.

### **Conclusion**

The hearing and coordination disorders caused by the disease can last for a long time, and attacks of the disease can lead to unilateral deafness. If the disease lasts for five years, then about 50% of people suffering from this disease may experience complete deafness.

The course of the disease is very individual. In some people, it may consist of a single attack. In most cases, attacks may recur. Sometimes Meniere's disease may suddenly stop and never appear again.

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