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COMPREHENSIVE AUDIOLOGICAL STUDIES SENSORY NEURAL HEARING LOSS OF NOISE GENESIS

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ABSTRACT

currently, noise is becoming one of the most common factors that adversely affects the organ of hearing. The purpose of this work was to assess the information content of a number of modern audiological tests in the diagnosis of sensorineural hearing loss of noise origin. 30 patients with bilateral hearing loss were subjected to a comprehensive audiological examination. Additionally, we inform you that we are conducting scientific research on the implementation of an improved method of speech audiometry for the diagnostic purpose of hearing loss of noise origin.

KEYWORDS

Hearing loss, audiometry, noise, sensorineural hearing loss, organ of hearing, speech audiometry, level of discomfort loudness (LDL), lower limit of perceived sound frequencies (LLPSF).

INTRODUCTION

Currently, noise is becoming one of the most common factors that adversely affects the organ of hearing. In this regard, the problem of acoustic damage to the sound-perceiving apparatus and assessment of the functional state are still relevant.

The purpose of this work was to assess the information content of a number of modern audiological tests in the diagnosis of sensorineural hearing loss of noise origin. One of the tasks is to study the effectiveness of our improved melody of speech audiometry in the Uzbek language; as well as the relationship between the prevalence and degree of changes in the nervous and cardiovascular systems. Development of a screening technique for identifying early forms of sensorineural hearing loss (noise origin).

MATERIALS AND METHODS

30 patients with bilateral hearing loss were subjected to a comprehensive audiological examination. There were 17 male patients and 13 female patients. All those examined, due to the specific nature of their profession, were exposed to different spectra and sound pressure levels of industrial noise. Anamnestic study allowed us to exclude other causes of hearing loss. The duration of the disease ranged from 10 to 30 years. After examining the ENT organs, we performed tone threshold audiometry, levels of auditory discomfort and dynamic range of the auditory field,

sensitivity to ultrasonic vibrations, the lower limit of perceived sound frequencies and intelligibility of quiet speech in conditions of masking speech interference.

Results. Based on the nature of the tonal hearing threshold curves, all patients were divided into two groups. The 1st group included patients with discontinuous type of curves (the initial stage of sensorineural hearing loss of noise origin). The 2nd group included patients with a gently descending type of curves (pronounced stage of sensorineural hearing loss of noise origin).

The clinical and audiological characteristics of hearing loss in these groups had a classic picture. When studying auditory sensitivity to ultrasound with a frequency of 80 kHz, it was found that in 19 patients, auditory sensitivity to ultrasound was preserved. The remaining patients did not perceive ultrasound. When determining the level of discomfort loudness (LDL) and the dynamic range of the auditory field, it was found that in 19 examined LDL did not differ from the norm, a pronounced narrowing of the auditory field was characteristic at those frequencies at which there was an increase in auditory thresholds, which indicates the manifestation of the phenomenon of accelerating the increase in volume at corresponding frequencies. Determination of the lower limit of perceived sound frequencies (LLPSF) showed that the perception of

low-frequency sounds in the examined patients is characterized by indicators opposite to auditory sensitivity to ultrasound: in individuals with high thresholds for the perception of ultrasound. LLPSF is within normal limits. Speech intelligibility indices of patients with a severe stage of sensorineural hearing loss of noise origin, both in silence and especially against the background of interfering speech interference, are significantly higher than in patients with sensorineural hearing loss of other etiologies.

The most pronounced differences are observed with an equal level of useful calculation of the masking interference signal in (14 patients) and also in cases where the masking speech interference exceeded the useful signal by 10 dB in (12 patients). The drop in hearing sensitivity remained at a frequency of 4000 Hz and depended on the duration of the disease. Patients exposed to industrial noise for a long time had increased hearing thresholds for tones of corresponding frequencies.

Based on the work carried out, it can be recommended for these purposes to study the intelligibility of quiet speech under conditions masking speech interference. To identify the earliest forms of hearing impairment in people working in conditions of intense low-frequency noise, it is necessary to pay special attention to the state of auditory sensitivity in the low and medium frequencies.

CONCLUSIONS

Thus, if the hearing thresholds in these ranges are 19-20 dB at a frequency of 4000 Hz, they do not exceed 30 dB, from (in comparison with the spectral composition of the affecting noise) this condition can be regarded as the initial form of hearing loss. Additionally, we inform you that we are conducting scientific research on the implementation of an improved method of speech audiometry for the diagnostic purpose of hearing loss of noise origin.

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