RELATIONSHIP BETWEEN COGNITIVE FUNCTION AND EMOTIONAL DISTURBANCES IN CHRONIC TINNITUS

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Abstract. *For many patients, tinnitus is an unpleasant condition that significantly interferes with their daily activities and reduces their quality of life, as it is very often accompanied by hearing loss, difficulty understanding speech, impaired attention and concentration, irritability, anxiety, and depression. The aim of our study is to explore the relationship between psychoemotional status and cognitive performance in patients with chronic tinnitus using standardized clinical tools. The study included 20 patients. We used widely applied standardized questionnaires such as the Tinnitus Handicap Inventory (THI) to assess tinnitus severity and its impact on patients' lives, the Hospital Anxiety and Depression Scale (HADS) to assess the psychoemotional background of patients, and the Montreal Cognitive Assessment (MoCA) to evaluate cognitive status. After obtaining the results and conducting the analysis, we established that patients with a pronounced degree of tinnitus showed worse results on the tests. This indicates that as tinnitus severity increases, cognitive status decreases and depression and anxiety worsens. For this reason, tinnitus should be diagnosed and treated comprehensively in order to improve patients' quality of life.*

Keywords*: tinnitus, anxiety, depression, psychoemotional status, cognitive status, THI, HADS, MoCA.*

Introduction.

Tinnitus (translated from Latin as "ringing") is the perception of sound in the ears in the absence of an external noise source. It can be unilateral or bilateral, acute or chronic, objective or subjective. Most patients describe this sensation as ringing in the ears, but the sounds can be high-frequency (similar to whistling or ringing) or low-frequency (hissing, buzzing, or humming) [1]. Tinnitus may accompany patients constantly or appear periodically. In all people with tinnitus, perception is individual. Although the noise is heard in the ears, in fact it arises in the neural circuits of the brain. This proves that tinnitus is not only a pathology of the auditory system, but also a condition that mainly affects the central nervous system [2]. Tinnitus is a complex condition with many possible causes. Usually, tinnitus is divided into two main groups: subjective tinnitus (when the noise is heard only by the patient, the most common) and objective tinnitus (a sound that can be heard both by the patient and by the physician using diagnostic instruments, a rare form) [3]. The etiology of tinnitus is very variable; the most common causes include sensorineural hearing loss, impaired microcirculation in the brain and inner ear, cervical syndrome, temporomandibular joint dysfunction, vascular changes, injuries, and tumors. Tinnitus is a widespread condition worldwide. According to the WHO, approximately 15% of the world's population suffers from tinnitus, of which only 20% seek medical care, while 80% tolerate it or believe it will resolve on its own. At the same time, about 6% of the population has a pronounced degree of tinnitus, which is an unfavorable indicator for their quality of life. About 1 in 10 adults experiences tinnitus, and approximately 1 in 100 it significantly reduces daily activity. With age, these indicators unfortunately increase. The annual increase in new cases is approximately 1% [4]. Long-standing tinnitus develops because of the formation of a pathological closed "vicious circle." Central and subcortical structures of the brain, with involvement of the limbic system, take part in the formation of this circle. For this reason, tinnitus is very often accompanied by depression and anxiety, as well as by disturbances of cognitive status. Published data show that symptoms of anxiety and depression are relatively common in this group of patients. According to

these data, it has been established that anxiety disorders occur in approximately 48% of patients with long-standing tinnitus, while signs of depression may be detected in up to 84% of cases [5]. In fact, the patient's subjective attitude toward this condition is also of great importance, because in patients with a lower level of acceptance of tinnitus it is associated with an increase in depressive manifestations and a deterioration in quality of life. At the same time, several studies report an association between severity of tinnitus and cognitive performance. Persistent internal noise may create an additional cognitive load, which can interfere with attention and information processing. Recognizing tinnitus as part of a wider network of brain functions enables more accurate assessment strategies and targeted interventions.

Materials and methods.

The study included 20 patients with chronic subjective tinnitus who were observed at a National Medical Center in Tashkent. All participants were older than 18 years. Patients with acute psychiatric conditions or decompensated somatic diseases were not included. Assessment was performed using standardized clinical scales. We assessed patients using standard clinical scales. We evaluated tinnitus severity with the Tinnitus Handicap Inventory (THI). We measured cognitive functioning with the Montreal Cognitive Assessment (MoCA), and we assessed psychoemotional status with the Hospital Anxiety and Depression Scale (HADS). Based on THI scores, the patients were divided into three groups according to tinnitus severity: a) mild tinnitus (n = 6) b) moderate tinnitus (n = 12) c) severe tinnitus (n = 2) (Table 1)

Table 1.

Psychoemotional and cognitive function indicators according to tinnitus severity

Groups	N	THI	HADS-A	HADS-D	MoCA
Mild tinnitus	6	28.3±7.1	5.83±1.47	4.50±1.05	26.2±1.2
Moderate tinnitus	12	46.0±6.4	13.33±3.01	8.00±1.54	23.4±2.6
Severe tinnitus	2	64.0±5.7	19.0±1.41	13.5±2.12	16.0±1.4

The results confirm that chronic tinnitus negatively affects quality of life. The most pronounced changes were observed in patients with a high degree of tinnitus severity. Specifically, higher THI scores corresponded to reduced MoCA scores and elevated HADS values

Results and discussion.

According to our observations, analysis of the data draws attention to the fact that patients with more pronounced tinnitus demonstrated significantly higher levels of depression and anxiety on the HADS questionnaire compared to other groups. Patients with severe tinnitus also showed the worst results on the MoCA scale. This may indicate a decrease in overall cognitive functioning, attention, and concentration. But in contrast, patients with milder symptoms of tinnitus showed relatively preserved cognitive function and lower levels of psychological burden. Based on our observations, tinnitus severity cannot be explained by auditory factors alone. It was established that tinnitus is closely interconnected with the psychoemotional background and cognitive status of patients. Our results also highlight the practical importance of evaluating these domains together in everyday neurological practice.

Conclusion.

Most patients with chronic tinnitus suffer from long-lasting noise in the ears and are prone to associated psychoemotional problems. It should be noted that cognitive changes are also an important component of the clinical picture of chronic tinnitus. In clinical settings, it may be helpful to look not only at tinnitus itself, but also at cognitive function and psychoemotional state, using tools like THI, MoCA, and HADS. The data obtained in this study highlight the importance of early identification of these changes to improve patients' quality of life and optimize treatment strategies.

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