BRAIN-DERIVED NEUROTROPHIC FACTOR AS A MARKER OF NEUROPLASTIC CHANGES

A.K. Abdul, M.Yu. Yurkevich, A.V. Kazachok
Belarusian State Medical University, Minsk, Republic of Belarus
Scientific supervisor: C.B.Sc., **Zh.A. Ibragimova**

Background: Alcohol affects all levels of nervous system functioning. The neurobiological basis for the development of alcohol dependence includes degenerative changes in brain structures, as well as an imbalance of trophic factors and neurotransmitters. One of the main proteins regulating synaptic plasticity under conditions of alcohol intoxication is brain-derived neurotrophic factor (BDNF), which correlates with the characteristics of alcohol consumption (quantity, duration) and the presence of psychopathological and structural brain changes.

Objective: To analyze the level of BDNF as a marker of brain structure remodeling in alcohol abuse.

Materials and methods: The study included patients from the Minsk Regional Clinical Center "Psychiatry and Narcology" (n=41) aged 20 to 40 years (33±4 years) who are abusing alcohol. The comparison group consisted of conditionally healthy individuals (n=19, 29±6 years old) who did not consume alcohol according to their medical history. The concentration of BDNF was determined in blood plasma by the ELISA method using the Fine Test system (China). The results were recorded on a Multiskan SkyHigh spectrophotometer (Thermo Scientific, Finland). Statistical analysis was performed using Statistica 10.0.

Results and discussion: BDNF is synthesized in all parts of the central nervous system and is able to cross the blood-brain barrier, so its level in the bloodstream is considered an indirect indicator of its release in the brain. In patients with alcohol dependence syndrome, an increase in BDNF concentration was found compared to the group of conditionally healthy individuals: 189.20 (140.20-234.30) pg/ml *vs.* 132.90 (88.34-177.20) pg/ml, respectively ($p=0.04$). No statistically significant differences were found between the groups of patients with signs of alcohol dependence (189.20 (140.20-234.30) pg/ml) and those who consume alcohol with harmful consequences (141.80 (112.30-231.60) pg/ml) ($p>0.05$).

Conclusion: The imbalance of neurotrophic factors as a result of ethanol consumption plays a key role in the development of alcohol dependence. The established increase in BDNF in patients with alcohol dependence who are in the stage of alcohol withdrawal syndrome may indicate the activation of regulatory mechanisms that ensure neuronal

remodeling, thereby reducing the motivation to consume alcohol and pathological craving for it.

Keywords: Neuroinflammation, alcohol dependence, alcohol consumption, neuroplastic change.

THE FEDERAL STATE BUDGETARY EDUCATIONAL INSTITUTION
OF HIGHER EDUCATION
«STAVROPOL STATE MEDICAL UNIVERSITY»
OF THE MINISTRY OF HEALTHCARE OF THE RUSSIAN FEDERATION

THE INTERNATIONAL SCIENTIFIC CONFERENCE FOR STUDENTS AND YOUNG RESEARCHERS IN ENGLISH «TOPICAL ISSUES OF MEDICINE»

Abstract Book

Stavropol, 2025