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The Significance of Icam-1 Marker in Chronic Disorder of Cerebral Circulation

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Annotation: Cerebrovascular disease, blood circulation disorder in the brain is one of the most important medical and social problems, and it takes the leading place in terms of morbidity and mortality of the population. In addition, it is characterized by a high mortality rate and is considered one of the main causes of permanent disability. Chronic TsVK is considered an important risk factor for the development of ischemic stroke and is accompanied by neurological and mental disorders(ФединА.И.,2015). There are many scientific studies focused on diabetes and acute cerebral hemostasis. Nevertheless, chronic forms of TsVK have been studied very little. The pathogenesis of DM is mainly determined by the increased risk of atherosclerosis, cerebral angiopathy and cognitive impairment.

Key words: cognitive dysfunction, chronic blood circulation disorder in the brain, hematoencephalic barrier.

Долзарблиги. Cerebrovascular diseases are one of the current medical and social problems, and are the leading cause of morbidity and mortality in economically developed countries [1]. Vascular diseases and especially cerebrovascular diseases are important medical and social problems in our country [5]. The high occurrence of the disease among the working-age population not only causes a decrease in labor resources, but also causes premature death, disability, and temporary unfitness for work, causing serious economic damage by reducing the country's gross domestic product [3]. The above testified that cerebrovascular diseases are a global epidemic, causing not only medical and social problems, but also problems of a national scale.

Aim of study: It consists in studying the importance of hematoencephalic barrier and ICAM-1 markers in the development of cognitive changes in patients with chronic cerebral circulation disorders and improving prediction methods.

Material and methods: 147 patients were involved in the research to solve the scientific goals and objectives of our research work. The patients involved in the study were divided into 2 groups, i.e. primary and comparative. Among them, in the main group, 82 patients were diagnosed with type 2 diabetes and cerebrovascular pathology, and this diagnosis was made by an endocrinologist based on standards.

Among the patients in the main group, men made up 63.4% (n=52), women made up 36.5% (n=30). The average age of patients is 54±1.5 years

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General information of those involved in the study is presented in Table 1 .1.

Indicators	Main group (n =117)	Comprative group (n=30)
Mid age (йил)	54±1,5	49,3±1,7
Female (%): **Men** **Woomen**	63,4,1±1,7 36,5±1,9	60±0,8 40±1,4
ТВИ (mid)	28,4	25,8

Amount of glycohemoglobin (%)	7,9	3,6
Period of disease (year) **Diabetes mellitus** **Serebrovascular disease**	8,1±0.3 4,8±0.5	- 5.7±0.7
Hyperxolesterinemiya (%)	84,6±1,3	79,4±1,9
Mild cognitive impairment (%)	59,9±0,4	61,4±0,7
Moderate cognitive impairment (%)	41,1±0,7	38,6±0,9

Complications of chronic cerebral circulation disorders include micro- and macroangiopathies. According to localization, macroangiopathies are divided into such groups as damage to heart vessels (MI and myocardial infarction), damage to peripheral vessels, including lower limbs and damage to cerebral vessels (stroke and chronic circulatory disorders in the brain).

Based on the above information, we also studied the diagnostic and prognostic value of a number of markers evaluating the processes of GEB permeability and intercellular adhesion among the factors leading to the development of KD in chronic cerebral blood circulation disorders.

Tissue necrosis factor (TNF-α) from inflammatory mediators that increase GEB permeability, vascular endothelial growth factor (VEGF-A) that evaluates vascular endothelial damage, and cell adhesion molecule (ICAM-1) and platelet adhesion from tests that evaluate intercellular adhesion were determined.

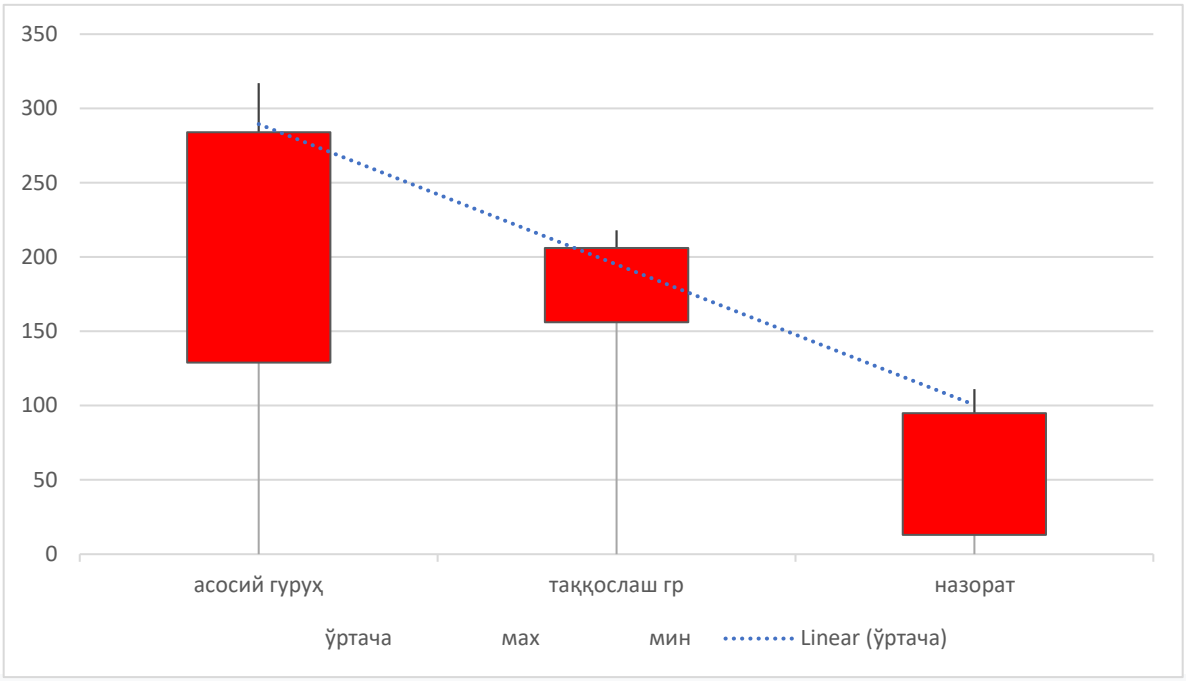
ICAM-1 (intercellular adhesion molecule-1) is a CD 54 receptor on the membrane of leukocytes and a transembryonic protein that adheres to the vascular endothelium. Its main effect is that it is used as a biomarker of endothelial activation. The main activity of ICAM-1 is the adhesion of neutrophils, lymphocytes and monocytes to the activated vascular endothelial layer. is a provision, and its increase in blood serum indicates the activation of intercellular adhesion and increased permeability of GEB.

Analysis of laboratory markers evaluating activation of intercellular adhesion and permeability of GEB

	Main group (n = 117)	**Comprative group (n = 30)**	**P***
VEGF-A (пг/мл) **(N= 75-120)**	284,5 [128,5; 317,5]	206,6 [156,1;218,4]	0,001
ICAM-1 нг/мл (N=4,7-6,8)	32,8 [17,6; 36,5]	24,8 [16,8; 27,2]	0,001
TNF α пг/мл (N=8,4 гача)	16,4 [9,1; 20,7]	15,5 [9,4; 18,9]	0,001
Platelet adhesion index (N=20-50%)	78,5 [65,2; 81,8]	64,6 [53,8; 76,1]	0,01

In the data presented in the table, it can be determined that the VEGF-A indicator in patients with type 2 QD is 1.37 times higher than the control group, and 2.9 times higher than the control group ($r<0.001$).

This indicates that the level of vascular endothelial dysfunction in the patients of the main group is significantly improved compared to the comparison groups.



In the comparative analysis of the index of ICAM-1, the average indicator of this biomarker was 1.05 times higher in the main group than in the control group, and 2.8 times higher in the control group, indicating that the activity of inflammatory cytokines is several times stronger in TsV pathology comorbid with QD. ($r<0.001$).

CONCLUSIONS.

1. The presence of risk factors such as arterial hypertension with its complications, long-lasting hyperglycemia, glycemic variability, obesity and excess body weight, hypercholesterolemia, which are comorbid with the main disease in the development of cognitive dysfunction among patients with chronic disorders of blood circulation in the brain, increase the likelihood of the formation and development of KB. increases;
2. The diagnostic and prognostic value of TNF-α, VEGF-A, ICAM-1 and platelet adhesion was determined in order to evaluate GEB permeability and intercellular adhesion in patients with chronic cerebral blood circulation disorders. In this case, reliable correlations were observed between the clinical manifestation of KB and laboratory indicators, where the strongest positive correlation was observed between the indicators of ICAM-1 and VEGF-A and the manifestation of KB. It was found that R=0.79 between ICAM-1 and mild KB and R=0.87 between moderate KB;

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