THE CONTENT OF ENDOTHELIN AND HOMOCYSTEINE IN BLOOD AND LACRIMAL FLUID IN PATIENTS WITH HYPERTENSIVE RETINOPATHY

Zhalalova D.Z.,Khidirov B.,Ochilov I.

Samarkand State Medical University, Samarkand, Uzbekistan.

Resume: This article presents data that examines the determination of the level of immune biochemical markers of endothelein and homocysteine in the lacrimal fluid and blood, the measurement of the content of which can be an additional informative and non-invasive method for the prognosis, assessment of the severity and control of the treatment of local microcirculatory disorders in the eye

Key words: arterial hypertension, retina, diagnosis, treatment, prevention, endothelin, homocysteine.

Introduction. Currently, endothelin-1 (ET-1) is considered as a marker and predictor of the severity and outcome of many diseases associated with vascular pathology. Thus, the determination of ET-1 content in blood plasma is recommended to be used as a laboratory test in patients with arterial hypertension (AH) to determine the severity of vascular complications.

ET-1 is one of the most powerful vasoconstrictors. It is an oligopeptide that consists of 21 amino acids and is formed from proendothelin-1 under the influence of an endothelin-converting enzyme. The secretion of ET-1 is influenced by numerous physical (hypoxia) and humoral factors, such as cytokines. The concentration of ET-1 in blood plasma is usually insignificant (0.26—0.5 fmol /ml). At the same time, the role of ET-1 as a circulating hormone affecting hemodynamic parameters has been proven. Homocysteine is a natural sulfur–containing amino acid not found in proteins.There is information about the relationship between endothelin metabolism and homocysteine. Elevated levels of ET-1 and homocysteine contribute to the death of ganglion cells in the retina, i.e. the development of hypertensive neuropathy and retinopathy. Thus, in the pathogenesis of regional microcirculation disorders in the retina and the development of hypertensive retinopathy and neuroretinopathy,

endothelins and homocysteine components play a large role. The question of their relationship in ophthalmopathologies remains open.

The aim of the work is to study the content of endothelin and homocysteine in blood and lacrimal fluid in patients with arterial hypertension.

Material and methods

10 patients with GH (stage 1-2) were examined, the average age was 67±4.3 years. The control group included 11 healthy volunteers of the appropriate age range. Blood from the ulnar vein and a tear were examined, which was collected from both eyes using a small eppendofer container, which was then handed over to the laboratory.

The ET-1 content was determined using the enzyme immunoassay (Biomedica, Austria). The determination of the level of homocysteine in the blood serum was carried out by the enzyme immunoassay using the Human kit.All measurements were carried out on a tablet analyzer (LM 01A, "Immunotech", Czech Republic). Statistical processing of the obtained results was carried out according to the Statistica program. The reliability of the differences was determined using the Student's t-test.

Results and discussion

As a result of the study, an increase in the content of ET-1 and homocysteine in the lacrimal fluid and blood was revealed in patients with GH. A significant 3-fold increase ($p<0.003$) in the content of ET-1 and homocysteine in the lacrimal fluid was shown at GY (2.9±0.48 fmol/ml) compared with the control group (0.97± 0.4 fmol/ml).

.In the blood serum, there was a tendency to increase the level of ET-1 (2.9± 1.0 fmol/ml, the norm was 2.3± 0.6 fmol/ml). Patients also had a significant increase in the content of homocysteine in the tear (59.1±3.0 mmol/ml, norm — 50.6±1.8

mmol/ml; $p<0.05$) and a tendency to increase the level of homocysteine in the blood serum (132.7±29.9 mmol/ml, norm — 103.3±3.8 mmol/ml). However, there was no significant correlation between the content of ET-1 and plasminogen in the blood and tear in the examined patients.

Based on the above, the data obtained indicates a significant (2.5—3.0 times) increase in the content of ET-1 and homocysteine in the tear in patients with GH. At the same time, a tendency to increase the level of ET-1 and homocysteine in the general blood flow was revealed. In the available literature, we have not found information about the content of ET-1 in the lacrimal fluid in GH. Apparently, the local increase in the content of ET-1 and homocysteine is facilitated by local hypoxia and ischemia, characteristic of GH, which enhance the transition of proendothelin to ET-1. In addition to vasoconstrictor action, ET-1 triggers hyperplasia reactions, which can lead to the progression of retinopathy. The increased content of ET-1 in the tissues and liquid media of the eye is one of the factors of the development of hypertensive neuroretinopathy in hypertension, as it leads to ischemia and hypoxia of the optic nerve due to deterioration of its blood supply, which is the cause of the death of ganglion cells. At the same time, ET-1 enhances the formation of nitric oxide (NO), which also promotes apoptosis of retinal ganglion cells.

A local increase in the level of homocysteine in GH may indicate its insufficient cleavage, which leads to inhibition of the local fibrinolytic potential. A local increase in the content of ET-1 and homocysteine and a simultaneous decrease in the activity of fibrinolysis are among the most important causes of microcirculation disorders and vascular microthrombosis in the retina in GH.

Conclusion. Thus, we have shown that in eye diseases, in the pathogenesis of which local microcirculation disorders play an important role, there is a significant increase in the content of ET-1 and homocysteine in the lacrimal fluid. Measurement of the content of ET-1 and homocysteine in tears and blood can be an additional

informative and non-invasive method for the prognosis, assessment of severity and control of treatment of local microcirculatory disorders in the eye.

Literature:

1. Zukhridinovna Z. D. modern aspects of neuroprotective treatment in hypertensive retinopathy //Web of Scientist: International Scientific Research Journal. –2022. – T. 3. –No. 02. –C. 949-952. https://wos.academiascience.org/index.php/wos/article/view/947/878
2. Zukhriddinovna, Z. D. (2022). Development of classification criteria for neuroretinal ischemia in arterial hypertension. central asian journal of medical and natural sciences, 3(3), 59-65. https://doi.org/10.17605/OSF.IO/K76ZT4
3. .Zuhriddinovna Z. D., Kamaljanovna M. D. development of classification criteria for neuroretinal ischemia in hypertension //web of scientist: international scientific research journal. –2022. –т. 3. –no. 02. –c. 972-978. https://wos.academiascience.org/index.php/wos/article/view/951/8825
4. Z. ,Z. D. (2022). Rehabilitation and Treatment Algorithm for Patients with Ocular Ischemic Syndrome on the background of arterial hypertension. central asian journal of medical and natural sciences, 3(2), 211-213. https://doi.org/10.17605/OSF.IO/SYA5K9
5. Zukhriddinovna, Z. D. (2022). clinical and metabolic peculiarities children and teenagers with arterial hypertension. central asian journal of medical and natural sciences, 3(3), 177-184. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/75511
6. .Z. , Z. D., & K., M. D. (2022). Magnetic Resonance Tractographyas a Method of Choice for Neuroimaging in Ocular Ischemic Syndrome against the Background of hypertension. central asian journal of medical and natural sciences, 3(2), 207-210. https://doi.org/10.17605/OSF.IO/E2AH912
7. .D. Z, Z., Zh. B, E., & Z. Z, M. (2022). Changes visual systems at patients with essential arterial hypertension. central asian journal of medical and natural sciences, 3(3), 744-750. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/85113
8. .Zuxridinovna, J. D. (2022). Ultrasonic Dopplerography of retinal vessels in acute cerebral ischemia against the background of arterial hypertension. central asian journal of

medical and natural sciences, 3(3), 100-106. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/73714

9. Zukhriddinovna, Z. D. (2022). clinical and metabolic peculiarities children and teenagers with arterial hypertension. central asian journal of medical and natural science, 3(3), 177-184. retrieved from https://cajmns.centralasianstudies.org/index.php/CAJMNS/article/view/755
10. Zukhridinovna Z. D. modern aspects of neuroprotective treatment in hypertensive retinopathy //web of scientist: international scientific research journal. – 2022. – т. 3. – №. 02. – с. 949-952. https://wos.academiascience.org/index.php/wos/article/view/949/880 https://wos.academiascience.org/index.php/wos/article/view/949
11. Жалалова Д.З, Эшонкулов Ж.Б, Муратов З.З изменения зрительной системы у пациентов с эссенциальной артериальной гипертензией // sai. 2022. №d3. URL: https://cyberleninka.ru/article/n/izmeneniya-zritelnoy-sistemy-u-patsientov-s-essentsialnoy-arterialnoy-gipertenziey
12. Бабаев S., Бектурдиев S., Рахимов N., Джалалова D., Юсупова D., & Шаханова S. (2021). Assessment of the state of immunity in patients with tumors. in Library, 21(2), 218–225. извлечено от https://inlibrary.uz/index.php/archive/article/view/14549
13. Pyagay Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). THE effectiveness of conservative methods of treatment of actinic keratosis. conference zone, 150–155. retrieved from http://conferencezone.org/index.php/cz/article/view/948
14. Pyagay, Grigory Borisovich, & Nargiza Sayfutdinovna Ibragimova. (2023). criteria for selecting therapy for patients with actinic keratosis. conference zone, 156–161. retrieved from http://conferencezone.org/index.php/cz/article/view/949
15. Пягай, Г., Ибрагимова, Н., Мухамедов, Б., Маликова, Н., & Аллаева М. (2021). клинический случай поздней диагностики пигментной крапивницы. медицина и инновации, 1(1), 148–150. извлечено от https://inlibrary.uz/index.php/medicine_and_innovations/article/view/55
16. Zaslavsky D.V., Sidikov A.A., Garyutkina L.V., Pyagai G.B., Alaeva M.D., Ibragimova N.S., Malikova N.N., Kozlova D.V. A new principle for the diagnosis morphea in the onset of the disease // Russian Journal of Skin and Venereal Diseases. - 2021. - Vol. 24. - N. 3. - P. 263-274 https://doi.org/10.17816/dv72328 https://rjsvd.com/1560-9588/article/view/72328

17. А.А Садыков, Н.С Ибрагимова, А.А Юлдашев Зуд при коморбидных состояниях - va estetik tibbiyot, 2015 https://dermatology.uz/pdf/medic_juranal/Dermatologiya_N1_2015.pdf#page=29
18. Khakimov M.R. (2021). per una metodologia dell'insegnamento (delle lingue straniere). galaxy international interdisciplinary research journal, 9(10), 98–108. retrieved from https://giirj.com/index.php/giirj/article/view/30
19. A Sidikov, D Zaslavsky, A Sadykov, N Ibragimova,M Megna, O Olisova, D Kozlova, R Nasyrov, E. Shalaeva,T Garcia The new differential diagnostic test for the lichenoid drug eruption Dermatologic therapy, 2020 https://doi.org/10.1111/dth.13784
20. Ваисов А. Ш., Ташкенбаева У. А., Ибрагимова Н. С. Современные аспекты этиологии, патогенеза, течения и ранней диагностики васкулитов: обзор //Новости дерматовенерол. и репрод. здоровья. – 2007. – №. 2. – С. 88.
21. И.У Салимова, Ш.Т Аюпова, Н.С Ибрагимова аспекты псориаза в дерматологии - Spirit Time, 2020 https://www.elibrary.ru/item.asp?id=42780705
22. Хакимов, Мухамадали. "проблема перевода на английский язык "японского сценария" романа итальянского писателя а. барикко "шелк"." InterConf (2020).