VASOACTIVE DRUGS IN THE TREATMENT OF ISCHEMIC RETINAL DISEASES

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Abstract. *In this article, such an increase in the number of vascular diseases of the eye is directly related to the prevalence of hypertension, atherosclerosis and diabetes, which are almost impossible to treat. Existing methods of treatment are aimed only at slowing down the development of the pathological process or stabilizing the functions of the affected organs. The use of drugs that act through local factors, which help to reduce vascular tone and improve the hydrodynamic parameters of blood, will be covered in detail.*

Keywords: *eye diseases and their causes and prevention, diseases causing eye diseases, hypertension, atherosclerosis, cardiovascular diseases.*

ВАЗОАКТИВНЫЕ ПРЕПАРАТЫ В ЛЕЧЕНИИ ИШЕМИЧЕСКОЙ БОЛЕЗНИ СЕТЧАТКИ

Аннотация. *В данной статье такой рост числа сосудистых заболеваний глаз напрямую связан с распространенностью гипертонической болезни, атеросклероза и сахарного диабета, которые практически не поддаются лечению. Существующие методы лечения направлены только на замедление развития патологического процесса или стабилизацию функций пораженных органов. Подробно будет освещено применение препаратов, действующих через местные факторы, которые способствуют снижению тонуса сосудов и улучшению гидродинамических показателей крови.*

Ключевые слова: *заболевания глаз, их причины и профилактика, заболевания, вызывающие заболевания глаз, гипертоническая болезнь, атеросклероз, сердечно-сосудистые заболевания.*

INTRODUCTION

Various diseases of the retina and optic nerve, caused by both general and local circulatory disorders, occupy a significant place among the causes of visual impairment. Despite the undeniable progress in the treatment of vascular pathology of the eye, achieved in the last two decades, the number of patients with lesions of the optic nerve and retina continues to increase. This increase in the number of vascular diseases of the eye is directly related to the widespread prevalence of hypertension, atherosclerosis and diabetes, which are practically impossible to cure. Existing methods of treatment are aimed only at slowing down the development of the pathological process or stabilizing the functions of the affected organs. Ischemia is the most common pathological process that accompanies or causes ocular pathology.

MATERIALS AND METHODS

As in other areas of practical medicine, in ophthalmology, two main forms of the course of the ischemic process can be distinguished - acute and chronic. This requires a different approach to the choice of treatment methods, as well as medications.

The use of vasoactive drugs as one of the links in the complex treatment of ischemic processes in the optic nerve and retina requires a careful and individual approach.

Drug treatment aimed at vasodilatation is often insufficient to improve blood circulation, and sometimes even aggravate ocular ischemia due to the development of the “steal” syndrome. In this regard, it is necessary to increase perfusion, especially at the level of precapillaries and the arteriolar link of the capillary network.

RESULTS

The most commonly used drugs in the complex treatment of ischemic diseases are:

1. improving blood circulation in the cerebrovascular system (vinca drugs, pentoxifylline, nicergoline, cinnarizine);
2. agents that dilate peripheral vessels and improve blood circulation at the capillary level (xanthinol nicotinate);
3. vitamins;
4. agents that improve redox and metabolic processes in the body;
5. biostimulants;
6. antioxidants, etc.
7. Vasodilating drugs are widely used in the treatment of cardiovascular diseases. Vasodilators are divided into three main groups:
8. vasodilators of direct action;
9. calcium antagonists;
10. blockers of postsynaptic a1-adrenergic receptors.

Among direct-acting vasodilators, which in turn can be arterial, venous and arteriolar-venous, in practical ophthalmology, venous vasodilators (nitroglycerin and other nitrates) were previously used in acute ischemia. Nitrates relax the smooth muscles of the arteries and veins. But there is no exact data that this improves the perfusion of the vessels of the eye. According to some data, under conditions of a general redistribution of blood flow, the blood supply system of the eye can fall into the “steal” zone. Doses of nitroglycerin that do not cause changes in systemic blood pressure (BP) often lead to dilation of arterioles in the face and neck, flushing of the head, and headache due to expansion of the meningeal vessels. According to M.M. Krasnov, there is often a narrowing of the field of view and an increase in cattle against the background of taking nitrates.

More justified was the use of drugs acting through local factors that help reduce vascular tone and improve hydrodynamic blood parameters. Myotropic vasodilators have been used for many years to enhance peripheral circulation in areas where it is impaired due to acute or chronic vasoconstriction or spasm. Of the vasodilators, nicotinic acid, xanthinol nicotinate, vinca preparations, and pentoxifylline are currently the most widely used in ophthalmology. With the help of rheoophthalmography, a sufficiently high degree of vasodilating effect of the listed drugs on the vascular tract of the eye has been repeatedly proven.

Vinca preparations have a pronounced vasodilating effect on intraocular vessels, while they act anabolicly, increase oxygen uptake by brain cells and have an antiaggregation effect. The therapeutic effect of vinca drugs develops gradually. In our clinic, vinca preparations were used to treat acute (ischemic neuropathy, occlusion of branches of the central retinal artery) and chronic (glaucomatous optic nerve atrophy, dry form of senile retinal degeneration) ischemic

diseases, 10 mg intravenously, 1 time per day for 7–10 days . At discharge, the drug was prescribed in 5 mg tablets 3 times a day for 2–3 months.

DISCUSSION

Many authors noted the most pronounced vasodilating effect when using preparations containing nicotinic acid.

However, the effectiveness of vasodilators in cerebrovascular insufficiency is considered doubtful by many authors. Myotropic vasodilators are able to increase cerebral blood flow under physiological conditions. In vascular pathology, which often accompanies ocular ischemia or is its cause, the affected areas of the vessels are less responsive to them. In addition, it is known that in poorly perfused areas, blood circulation can be improved by increasing blood pressure. When using drugs of this group, especially intravenous, there is a drop in systemic blood pressure, which can lead to the development of the “steal” syndrome.

For the same reasons, some ophthalmologists express doubts about the advisability of prescribing vasodilators for glaucoma, arguing that a decrease in systemic blood pressure can lead to a deterioration in the blood supply to the eye due to a decrease in perfusion pressure. However, most studies have found that the blood supply to the eye improves under the influence of vasodilators with a decrease in systemic blood pressure by no more than 10% of the initial level. A more significant decrease in blood pressure leads in some patients to a deterioration in the blood supply to the eye.

Considering that the effect after the course of treatment with vasodilators persists for 2-8 months, courses of drug treatment should be carried out 2-3 times a year.

COCNLUSIONS

In addition, other ways of therapy have been developed based on improving the rheological parameters of blood (increasing the deformability of erythrocytes, reducing their aggregability, etc.). Many of the modern drugs used to treat ischemic conditions of the eye combine several of these properties at the same time.

Quite widely in ophthalmology, purine derivatives are used to treat ischemic conditions of the posterior segment of the eye. Xanthinol nicotinate reduces the level of fibrinogen in the blood and the aggregation ability of platelets, and reduces blood viscosity. With prolonged use of xanthinol, nicotinate helps to lower blood levels of cholesterol and atherogenic lipoproteins. The drug can be used (as part of complex treatment) intravenously (preferably by drip, 300 mg per 200 ml of saline 1 time per day), intramuscularly (300 mg 1 time per day) and parabulbarno (75 mg each) for 7-10 days, after which for 2-3 months you should switch to a tablet form.

The purine alkaloid is also pentoxifylline. The assignment of pentoxifylline to the group of vasodilators is very conditional, since it has a slight vasodilating effect, with almost no effect on hemodynamic parameters. The action of pentoxifylline is based on its effect on the hydrodynamic properties of blood. This drug acts on the rheological properties of the blood, on the one hand, and on tissue metabolism, on the other. In a hospital, it is desirable to prescribe pentoxifylline once a day intravenously, 5 ml of a solution (100 mg) and / or parabulbarno 10-15 mg for 7-10 days. After discharge from the hospital, the drug is prescribed 400 mg 3 times a day for 2-3 months.

REFERENCES

1. Алекян Б. Г. Рентгенэндоваскулярная диагностика и лечение заболеваний сердца и сосудов в Российской Федерации – 2017 год / Б. Г. Алекян, А. М. Григо- рьян, А. В. Стаферов, Н. Г. Карапетян // Эндоваскулярная Хирургия. – 2018. – Т. 5, № 2. – С. 93–240.
2. Жалалова Д.З. Эндотелин -1 ва гомоцистеин даражасини артериал гипертензия фонида тўр парда ўзгаришларида эндотелиал дисфункциянинг маркерлари сифатида текшириш // Биомедицина ва амалиет журнали, (2021) том 6 №5, 203-210
3. Задионченко В. С. Глаз — зеркало сердечно-сосудистой патологии. Взаимосвязь функционального состояния сетчатки и тяжести течения артериальной гипертонии / В. С. Задионченко, Т. В. Адашева, А. М. Шамшинова, М. А. Аракелян // Рациональная фармакотерапия в кардиологии. – 2016. – Т. 7, № 2. – С. 185–192.
4. Киселева Т. Н. Методы оценки глазного кровотока при сосудистой патологии глаза / Т. Н. Киселева, Н. А. Аджемян // Регионарное кровообращение и микроциркуляция. – 2015. – Т. 14, № 4. – С. 4–10.
5. Долиев, М. Н., Тулакова, Г. Э., Кадырова, А. М., Юсупов, З. А., & Жалалова, Д. З. ЭФФЕКТИВНОСТЬ КОМБИНИРОВАННОГО ЛЕЧЕНИЯ ПАЦИЕНТОВ С ЦЕНТРАЛЬНОЙ СЕРОЗНОЙ ХОРИОРЕТИНОПАТИЕЙ // Вестник Башкирского государственного медицинского университета, (2016). (2), 64-66.
6. Жалалова, Д. З., Кадирова, А. М., & Хамракулов, С. Б. ИСХОДЫ ГЕРПЕТИЧЕСКИХ КЕРАТОУВЕИТОВ НА ФОНЕ ЛЕЧЕНИЯ ПРЕПАРАТОМ «ОФТАЛЬМОФЕРОН» В ЗАВИСИМОСТИ ОТ ИММУННОГО СТАТУСА ПАЦИЕНТОВ // МЕЖДИСЦИПЛИНАРНЫЙ ПОДХОД ПО ЗАБОЛЕВАНИЯМ ОРГАНОВ ГОЛОВЫ И ШЕИ, (2021). 103.
7. Жалалова, Д. З. Метод комбинированного лечения диабетической ретинопатии // Врач-аспирант, (2009). 37(10), 864-868.
8. Кадирова, А. М., Бобоев, С. А., & Хакимова, М. Ш. РАННЕЕ ВЫЯВЛЕНИЕ И ЛЕЧЕНИЕ СПАЗМА АККОМОДАЦИИ У ДЕТЕЙ // Форум молодых ученых, (2021) (5), 191-196.
9. Долиев, М. Н., Тулакова, Г. Э., Кадырова, А. М., Юсупов, З. А., & Жалалова, Д. З. ЭФФЕКТИВНОСТЬ КОМБИНИРОВАННОГО ЛЕЧЕНИЯ ПАЦИЕНТОВ С ЦЕНТРАЛЬНОЙ СЕРОЗНОЙ ХОРИОРЕТИНОПАТИЕЙ // Вестник Башкирского государственного медицинского университета, (2016). (2), 64-66.
10. Жалалова, Д. З. Метод комбинированного лечения диабетической ретинопатии // Врач-аспирант, (2009). 37(10), 864-868.
11. Жалалова Д.З.Эндотелин -1 ва гомоцистеин даражасини артериал гипертензия фонида тўр пардв ўзгаришларида эндотелиал дисфункциянинг маркерлари сифатида текшириш // Биомедицина ва амалиет журнали, (2021) том 6 №5, 203-210
12. Жалалова Д.З. Мультикомпонентный подход к диагностике изменений сетчатки при артериальной гипертензии // Биология ва тиббиет муаммолари, (2021) № 5 (130),205-211
13. Жалалова Д.З. ОКТ-ангиография в оценке ретинальной и хореоретинальной микроциркуляции у пациентов с неосложненой артериальной гипертензией / I Международный офтальмологический конгресс IOC Uzbekistan, 2021 г, Ташкент,с 96

14. Жалалова Д.З.ОКТ- ангиография при оценке сосудистого русла сетчатки и хориоидеи// Биология ва тиббиет муаммолари, (2021) № 6 (130),211-216
15. Жалалова Д.З. Классификационые критерии изменений сосудов сетчатки при артериальной гипертензии/ Международная научная конференция Университетская наука: взгляд в будущее, (2022) , Курск, 56-64