WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 2, Feb., 2022

MODERN ASPECTS OF NEUROPROTECTIVE TREATMENT IN HYPERTENSIVE RETINOPATHY

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Abstract
Hypertension is a major risk factor for cardiovascular disease and mortality, which is one of the major public health problems worldwide. Hypertension causes a number of pathophysiological ocular modifications that significantly affect the retina, choroid and optic nerve circulations, which lead to a number of ocular defects. The retina is the only site in the body where the microvascular can be directly tested, providing valuable information about hypertension associated with systemic risks. In the process of circulatory disorders in the capillaries, degeneration of the nervous tissue occurs, which is especially sensitive to any negative changes in metabolism.

Keywords: degeneration of the nervous tissue occurs, metabolism, hypertension, pathophysiological ocular, hypertensive retinopathy.

Introduction

A number of authors have established that the use of various vascular and neurometabolic agents is of great importance in the development of pathogenetically substantiated therapy for hypertensive retinopathy. To improve the metabolism of neurons in the brain and optic nerve, it is advisable to use neuroprotective treatment. A neurometabolic stimulant widely used in neurology Semax is a synthetic analogue of adrenocorticotropic hormone that does not show hormonal activity. This drug, used intranasally, has adapt genic and nootropic properties, and also increases the activity of neurons to hypoxia. It is quite safe, there is no information about its side effects. - a new generation drug belonging to the group of nootropics, which has a central cholinomimetic effect.

Semax nasal drops 0.1% has an original mechanism of neurospecific action on the central nervous system (CNS). Semax nasal drops 0.1% is a synthetic analog of corticotropin, which has nootropic properties and is completely devoid of hormonal activity. The drug affects the processes associated with the formation of memory and learning. Semax nasal drops 0.1% enhances and improves the body's adaptation to hypoxia, cerebral ischemia, which are often found in hypertensive retinopathy.

The goal is to study the effectiveness of the neuroprotector Semax in patients with hypertension retinopathy.

Material and Methods

This study included 31 patients with hypertensive retinopathy, aged 53 to 71 years, including 12 women, 19 men. The diagnosis of hypertensive retinopathy was established on the basis of clinical and instrumental studies. Patients underwent a comprehensive ophthalmological examination, which included the determination of visual acuity, intraocular pressure, examination of the visual field using standard automated perimetry, bio microscopy , ophthalmoscopy of the optic nerve head and retina. A- and B-scanning, ultrasonic color Doppler mapping (UTsDK) of the main vessels of the brachiocephalic trunk, transcranial and ophthalmo-dopplerography were performed. According to the indications, the patients were consulted by a therapist, cardiologist, neurologist, vascular surgeon. All patients were divided into 2 groups: in the 1st group, traditional treatment was used - 15 patients; in the 2nd group (main), traditional treatment was used in combination with Semax - 16 patients. Patients of the 2nd group were instilled into the nose Semax 1 drop 3 times a day for 10 days, then 1 drop 2 times a day for 2 months.

For an objective assessment of the effectiveness of treatment, we carried out special research methods in dynamics: CP, UCDC. Statistical processing of the obtained data was carried out by the methods of variation statistics using the Student's reliability test.

Results and Discussion

Visual acuity in the main group after treatment improved in 14 patients, in 2 patients there was no significant improvement in dynamics. The results of the observation revealed an improvement in visual acuity in the control group in 4 patients, no dynamics - in 3, deterioration in visual acuity - in 2 patients. On average, before treatment, visual acuity in patients of the main group was 0.09 ± 0.0084, after the course of treatment - 0.21 ± 0.0084 ($p < 0.01$). Before treatment, concentric narrowing of the visual fields was observed in 8 patients, sectoral prolapse - in 3 patients of the main group, and in the control group, concentric narrowing - in 5 and sectoral prolapse - in 6 patients. In the study of visual fields after treatment in patients of the main group, there was an expansion of the peripheral boundaries of the visual fields, a decrease in sectoral prolapse and volume of scotomas. In patients of the main group, the average deviation of retinal photosensitivity (MD) before treatment was

13.61±1.12 dB, after treatment - 8.12±0.73 dB. The standard deviation pattern (PSD) was 7.51±0.23 dB before treatment and 3.574±0.12 dB after treatment (p <0.05). In patients of the control group, after the course of treatment, there were no statistically significant changes in the average photosensitivity of the retina and standard deviation, as well as expansion of the peripheral boundaries of the visual fields. Dopplerography of the intracranial part of the great vessels revealed hemodynamically insignificant circulatory disorders in patients of both groups . Scanning of the vessels of the brachiocephalic trunk recorded non-stenotic atherosclerotic changes in the main arteries of the neck with a degree of stenosis of the lumen of the vessel over the area of less than 20% in 8 patients, spasm of the common carotid artery was observed in 5 patients. Dopplerography of the vessels of the organ of vision recorded hemodynamically significant asymmetry of velocity parameters of blood flow in the central retinal artery (CAR) in 19 patients, in the posterior short ciliary artery (PCCA) in 17 patients, in the ophthalmic artery (GA) in 25 patients. The ischemia coefficient averaged 0.69±0.0012.

After the neuroprotective treatment with Semax , patients of the main group showed an improvement in the hemodynamic parameters of the vessels of the brachiocephalic trunk, brain and organ of vision, as well as a decrease in the resistivity index over time. In the control group, the increase in blood flow in the main vessels and the decrease in the resistivity index were less pronounced compared to the main group. Improvement in visual functions after neuroprotective therapy was also influenced by the timing of patients' visits to specialists, where a more pronounced improvement was achieved at an earlier time of disease development. Consequently, the normalization of metabolism in nerve cells, the increase in the reserve capacity for the restoration of nerve fibers is much higher in the early stages of the disease. It should be noted that an increase in visual acuity, expansion of visual fields, a decrease in the volume of scotomas and sectoral loss of visual fields in patients of the main group after the use of Semax directly correlated with an improvement in hemodynamic parameters of the great vessels of the transcranial , brachiocephalic trunk and the eyeball, which was recorded during UCDC.

Conclusions

1. Neuroprotection with Semax helps to improve visual functions - increase visual acuity, expand the peripheral boundaries of the visual field and reduce the volume of scotomas, as well as increase the average photosensitivity of the retina.
2. Semax improves hemodynamic parameters in the main vessels of the brain and the

organ of vision, as evidenced by an increase in the speed parameters of hemodynamics and a decrease in the resistivity index in the main group.

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