



OPHTHALMOLOGICAL MANIFESTATION IN CHRONIC VERTEBRAL-BASILAR INSUFFICIENCY.

Kamilov H.M.¹

¹MD Professor, Head of the Department
of Ophthalmology, CRPCMR.

Zakirkhodzhaev R.A.²

²MD Associate Professor, Department of
Ophthalmology, TMA.

Khasanov N.N.³

³Ophthalmologist, Central Hospital of the
Ministry of Internal Affairs

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ABSTRACT

Nowadays, cerebrovascular diseases are widespread, and these diseases are the main cause of chronic decrease in visual acuity, blindness and disability of patients of different ages. Cerebrovascular diseases are interconnected with diseases of internal carotid arteries and vertebral artery vessels. Atherosclerosis, arterial hypertension, and diabetes are the causes of occlusion of spinal artery vessels. Damage to these arteries leads to damage to the cortical and subcortical centers of the visual organs. As a result, n. oculomotorius, n. As a result of damage to abducens, n, trochlearis, and the higher nerve center of vision, patients experience various degrees of changes, such as a chronic decrease in visual acuity, various changes in the field of vision, paralytic vertigo, double vision of objects, vision and convergence disorders, ophthalmoplegia, ophthalmohypertension, and accommodation disorders. The above-mentioned changes lead to a deterioration in the quality of life of patients. Currently, the fact that the etiopathogenesis of damage to the organs of vision in pathologies of the vertebrobasilar system has not been fully studied, and the criteria for prevention and treatment have not been fully developed, remains one of the most pressing problems of ophthalmology.

Conservative treatment methods used in vertebrobasilar circulatory failure are not always effective. In recent years, the rapid development of the field of angioplasty in medicine has greatly contributed to the development of a comprehensive approach to these problems. It is



known that the main cause of vertebrobasilar blood circulation failure is the damage of spinal arteries due to various reasons. Currently, endarterectomy and stenting of vertebral arteries are widely developed in vascular surgery. Wide application of these practices in vertebrobasilar circulatory failure leads to improvement of visual functions and quality of life of patients. The complex implementation of conservative treatment in combination with surgical procedures in circulatory failure in the vertebro-basilar system causes changes in the organs of vision in patients, improvement of visual functions and the development of complications.

Surgical procedures performed in spinal artery stenoses lead to failure of the vertebro-basilar system and improvement of visual functions.

Chronic cerebral ischemia and vertebro-basilar blood circulation deficiency play an important role in the development of chronic ischemic neuroopticopathy. This condition is caused by metabolic and neurodegenerative changes in the optic nerve, muscle nerves that move the eyeball.

Early detection and timely treatment of visual changes in vertebrobasilar blood circulation insufficiency are important to preserve the vision of patients and improve their quality of life.

The urgency of the problem. In the structure of the general cerebrovascular pathology, circulatory disorders in the vertebrobasilar basin occupy a significant place and more often at a young, working age, lead to disability, is a socially significant problem. The location in the blood supply basin of the main and posterior cerebral arteries of almost the entire optic tract and intracerebral parts of the visual analyzer (superior tubercles of the quadrigemina, lateral geniculate body, prethecal region and 17–19 fields of visual measles), as well as high sensitivity and complexity of the organization of the organ of vision, allow us to expect functional changes of varying severity in the presence of hemodynamically significant damage to

the arteries of the brain. It has been established that a violation of blood circulation in these vessels can lead to the development of a number of eye changes: blepharoptosis, visual impairment, paralytic strabismus, diplopia, accommodation paralysis, etc. The connection between the pathology of the brain and the eye is due to the anatomical and functional unity of their blood circulation. The vertebral arteries, being the first branch of the subclavian, form the main artery, constituting the vertebrobasilar system that feeds the occipital lobes of the measles of the brain with the central link of the visual analyzer and the brain stem with the nuclei and conductors of the oculomotor, plausible



and efferent nerves and the system of the posterior longitudinal bundle. Anatomical studies (G.D. Zagrulei, 1966) specified the existence of two systems that feed the optic nerve - peripheral, represented by the choroid plexuses of the pia mater, and central, to which most authors include the central 80 80 29 23 optic nerve artery, which is, according to according to some researchers, a branch of the ophthalmic artery, according to others, a branch of the central retinal artery. The outflow of venous blood occurs mainly through the central vein of the retina and the vein of the choroid plexus of the pia mater.

The aim of this work is to study the structure and frequency of clinical ophthalmological manifestations in various diseases of the vertebral artery (VA) and vertebrobasilar insufficiency.

Clinical manifestations of VBN.

Visual and oculomotor disorders. They are very common symptoms and are manifested by blurred vision, blurred vision of objects, sometimes photopsias (the appearance of visual images - "flies", "lights", "stars", etc.) or flickering scotomas (dark spots) and loss of visual fields.

Oculomotor disorders are expressed by transient diplopia (double vision) with mild paresis of the eye muscles. In most patients, these disorders are the initial manifestations of the disease, and in a quarter of them during service.

The syndrome of visual disturbances is caused by ischemia of the cortex of the occipital lobes, especially their poles and areas adjacent to the spur groove (photopsia, blurred vision of objects - sensation of a veil, "blurred vision"). Patients complain of "darkening in the eyes", "blurred vision", a transient decrease in visual acuity, flickering "flies" before the

eyes, colored spots, pain in the orbits, "sand in the eyes", pressure behind the eyes. These visual disturbances were often combined with a headache that began in the back of the head and moved to the temporal part of the head, as well as dizziness.

In neurological pathology, four main types of oculomotor disorders are observed.

- Mismatch of the movements of the eyeballs due to weakness or paralysis of one or more striated muscles of the eye; as a result, strabismus and splitting of the image occur due to the fact that the object in question is projected in the right and left eyes not onto similar, but onto disparate areas of the retina.

- Friendly violation of the conjugated movements of the eyeballs, or friendly gaze paralysis: both eyeballs consistently (jointly) cease to move arbitrarily in one direction or another (right, left, down, up); in both eyes, the same deficit of movements is revealed, while double vision and strabismus do not occur.

- Combination of paralysis of the muscles of the eye and paralysis of the gaze.

- Spontaneous abnormal movements of the eyeballs, occurring mainly in patients in a coma.

Spontaneous pathological movements of the eyeballs. Syndromes of spontaneous rhythmic gaze disorders include oculogyric crises, periodic alternating gaze, ping-pong gaze syndrome, ocular bobbing (English), ocular dipping (English), alternating oblique deviation, periodic alternating gaze deviation, etc. Most of these syndromes develops with severe brain damage, they are observed mainly in patients who are in a coma.

- Oculogyric crises - suddenly developing and persisting from several minutes to



several hours, the deviation of the eyeballs upwards, less often downwards.

- The "ping-pong" syndrome is observed in patients in a coma, it consists in periodic (every 2-8 seconds) friendly deviation of the eyes from one extreme position to another.

- In patients with gross damage to the pons or structures of the posterior cranial fossa, ocular bobbing is sometimes observed - rapid jerky movements of the eyeballs down from the middle position, followed by their slow return to the central position. There are no horizontal eye movements.

- "Ocular dipping" is a term that refers to slow downward movements of the eyeballs, followed by a quick return to their original position after a few seconds. The horizontal movements of the eyeballs are preserved. The most common cause is hypoxic encephalopathy.

Gaze paralysis occurs as a result of supranuclear disorders, and not due to damage to 3, 4, or 6 pairs of CNS. Glance (gaze) is normally a friendly conjugated movement of the eyeballs, that is, their coordinated movements in one direction.

Visual field defects. Visual disturbances in case of circulatory disorders in the vertebrobasilar basin are always hemianopic in nature (that is, bilateral defects in the form of homonymous hemianopsia, sectoranopsia, or homonymous scotomas). Bilateral lesions in the occipital lobes cause cortical blindness, the degree of which depends on the size of the lesion. A patient with cortical blindness is convinced that he has no visual impairment (Anton's syndrome). He can describe in detail, but absolutely erroneously, the objects that he supposedly sees, without realizing the fallacy of his descriptions. Unilateral infarcts cause

homonymous hemianopia. The preservation of macular vision in occipital lobe infarcts due to occlusion of the posterior cerebral artery is explained both by the bilateral cortical representation of the macular bundles and by the relative preservation of the cortical sections of macular vision with collateral blood supply from the posterior branches of the middle cerebral artery. Infarctions of the nucleus of the lateral geniculate body can cause hemianopsia, quadrant, or sectoranopsia. The source of blood supply to this area is partly anterior villous artery, partially - posterior villous artery. Occlusion of the posterior choroidal artery is manifested by a syndrome including hemianopsia, hemidysesthesia, and memory impairment. The lesion involves the lateral geniculate body, fornix, posteromedial thalamic nucleus, and the posterior part of the thalamic cushion.

visual agnosia. Visual agnosia, or the inability to recognize objects by their visual image, with intact vision and intact speech function. Lesions (bilateral) usually capture the conductors from the visual measles to other associative areas, in particular to the visual memory area. A patient with visual agnosia can recognize an object by its signs of a different modality (texture, sound, etc.). Blint's syndrome combines simultaneous agnosia, optical ataxia, and gaze apraxia. It is a clinical manifestation of bilateral parietal-occipital infarcts in the "watershed" zone of the territories of the middle and posterior cerebral arteries. Heart attacks of similar localization, in the areas of the "watershed", are often caused by a hemodynamic factor (hypoperfusion during stenosis of the vertebral artery).

Reading disorders as a symptom of Alexy's vertebrobasilar infarction can be observed



in infarcts of the occipital lobe of the dominant hemisphere. Patients can pronounce the word if you pronounce it to them in syllables and letters, but they cannot read it themselves. Over time, patients learn to read, but they continue to

have difficulty integrating the letters into a single word.

Color vision disorders. The defeat of the lingual gyrus can cause a violation of color perception in the contralateral visual fields (hemiachromatopsia).

References:

1. Early detection and timely treatment of visual changes in vertebrobasilar circulatory insufficiency are important for maintaining patients' vision and improving their quality of life.
2. Early diagnosis and adequate interpretation of these symptoms will not only improve the level and quality of treatment, but also prevent irreversible complications caused by late detection of the disease.

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