



Ischemic Eye Syndrome in Aortic Arch Disease

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Abstract: Ocular ischemic syndrome (OIS) is a disease that develops when tissue hypoperfusion and hypoxia occur due to stenosis, occlusion of the common or internal carotid artery. OIS began to be widely studied in the mid-twentieth century as a separate nosology. Authors such as Hedges, Kearns, and Hollenhorst (1963) first reported this in their study, calling the condition “venous stagnant retinopathy”. OIS was diagnose in 5% of patients with unilateral stenosis or occlusion of the internal carotid artery.

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Relevance

Although in recent years it has been referred to by various medical terms such as ischemic inflammation of the eye, ischemic coagulopathy, ischemic ophthalmopathy, this disease is still among the least studied pathologies and has not lost its relevance.

Ocular ischemic syndrome is not a common condition so most of these cases are often misdiagnosed or treated as a different entity. Therefore, it is very important for the ophthalmologists to have this condition in mind as a differential so that the patients can be diagnosed and treated as early as possible.

Purpose.

Early detection of symptoms of ocular ischemic syndrome in aortic artery disease and study of specific aspects of their clinical course.

Materials and methods.

In the Department of Specialized surgical departmentof the Central Hospital of the Ministry of Internal Affairs, 20 patients (26 eyes) were treated in 2021-2022 with a diagnosis of ocular ischemic syndrome. The mean age of the patients was 54.6 ± 10.3 years. The bed day averaged 12.9 ± 4.9 .

All patients were divided into 2 groups according to the course of the disease and anamnesis. In 14 patients in the first group I, retinal vascular occlusion was detected in 20 eyes. Chronic ischemic neuroopticopathy was detected in 6 patients in 6 patients in group II.

Among the methods of general ophthalmological examination were biomicroscopy, visometry, computer and spherical perimeter, ophthalmotometry, ophthalmochromoscopy, optical coherence tomography. Ultrasound doppler examination of brachiocephalic vessels, MSCT angiography, carotid

angiography were performed. A comprehensive examination was performed at the time of the first application, on days 5 and 10 of treatment.

In the treatment of all patients, drugs were prescribed based on medical standards.

Results.

Patients complained of pain around the eyeball, decreased visual acuity, intermittent blurring before the eyes, redness of the eye. On anterior segment examination, biomicroscopy conjunctival injection and conjunctival edema. On dilated funduscopy revealed narrowing of the retinal arteries, dilation of veins, microaneurysms, small hemorrhages in the form of dots and spots, swelling of the optic disc and macula, spontaneous pulsation of the retinal central artery. In optical coherence tomography we can see edema of the choroid and retina due to ischemia. After adequate conservative therapy was initiated, these complaints began to decrease by 5–6 days in both groups.

In the first main group, a sudden loss of visual acuity occurred in 16 eyes, with an average of $1 / \infty$ pr.l.certa to 0 (zero), a decrease in 8 eyes to 0.06 ± 0.02 , and in the second group, only permanent with a decrease of 0.1 ± 0.08 in 6 eyes. In the main group I we can see that visual acuity improved by 3.3 times by 10 days, and in the main group II by 2.1 times. The 1.57-fold difference between the groups is due to the fact that in the first group of patients the process is of an acute type and is easily eliminated when optimal conservative treatment is carried out.

Tonometry recorded normal values in all groups of patients during the follow-up period, averaging 12.5 ± 2.8 mm. of Hg. formed.

In the first periods of achromatic kinetic computer perimeter, the mean threshold of retinal detachment in patients of the first group was 15.7 ± 2.9 decibels (Db), while at 10 days it was 18.8 ± 1.9 Db. This figure was 19.0 ± 4.2 and 18.2 ± 2.5 Db, respectively, in the II group of patients, respectively, for the above examination periods. We can see that the main reason for the fact that the indicators belonging to this group remained almost unchanged was due to irreversible apoptosis of axons of ganglion cells. In static perimeter, the above ideas have also been proven. In differential light perception, we can see that the sum of the total field of view in the main group I was 400 ± 48.1 degrees in the first period and increased by 1.13 times (450 ± 25.7) by 10 days. In the second main group, the scores were 435 ± 48.6 and 487 ± 29.3 degrees, respectively. By 10 days in the field of view, the relative and absolute type of scotomas in the first group decreased from 63.5% to 29.6%, while in the second group the difference was 15.8%.

At a time when the dynamics of the chronic type changed for the better in 26% of patients, this result was 63% in the first main group.

Conclusions.

Until complications of carotid artery stenosis appear in the cerebrovascular system, it is important that the ophthalmologist diagnose the disease in a timely manner and make an accurate diagnosis, as its first symptoms first appear in the eye.

Early diagnosis and management is very important for uncommon conditions such as ocular ischemic syndrome to prevent further complications.

Collaboration of narrow specialists prevents the development of OIS complications.

In ophthalmological treatment, the focus is on changes in the posterior pole of the eye, followed by the elimination of the risk of disability due to complete loss of visual acuity.

Due to the impossibility of surgical intervention due to the small caliber of the retinal vessels, it is important to include an algorithm for the use of thrombolytic drugs in standard ophthalmic treatment measures.

OIS should be treated not only by an ophthalmologist, but also (and, in some cases above all) by a multidisciplinary team of other specialists, including vascular surgeons, cardiologists, neurologists and primary care physicians. The treatment can be ocular (conservative, laser and surgical) and systemic (conservative and surgical).

References

1. El Euch M., Zhioua I., Jaziri F., et al. Ocular ischemic syndrome and facial palsy associated with cryoglobulinemia and primary Sjögren's syndrome // *J. Fr. Ophthalmol.* -2020. –Vol. 43. –P. e397–e399. <https://doi.org/10.1016/j.jfo.2019.11.007>.
2. Iorga E.R., Costin D., Vascular emergencies in neuro-ophthalmology // *Rom. J. Ophthalmol.* -2020. –Vol. 64. –P. 323–332. <https://doi.org/10.22336/rjo.2020.54>.
3. Reddy S., Tyagi M., Suresh A., A. Dogra, Multimodal imaging in bilateral ocular ischaemic syndrome with anterior ischaemic optic neuropathy in a case of Takayasu arteritis // *BMJ Case Rep.* -2020. –Vol. 13. <https://doi.org/10.1136/bcr-2020-236351>.
4. Reinhold A., Tzankov A., Matter M.S., et al., Ocular Pathology and Occasionally Detectable Intraocular Severe Acute Respiratory Syndrome Coronavirus-2 RNA in Five Fatal Coronavirus Disease-19 Cases // *Ophthalmic Res.* -2021. –Vol. 64. –P. 785–792. <https://doi.org/10.1159/000514573>.
5. Sakai H., Kawata K., Masuoka J., et al. Diagnosis and clinical course of ocular ischemic syndrome with retinal vascular abnormalities due to unilateral ocular artery and internal carotid artery stenosis in a child with neurofibromatosis type 1: a case report // *BMC Ophthalmol.* -2020. –Vol. 20. <https://doi.org/10.1186/s12886-020-01670-z>.
6. Wang M., Gao Y.-F., Chen W., et al. Correlation of ischemic ophthalmopathy with lacunar infarction. *Int. J. Ophthalmol.* -2020. –Vol. 13. –P. 960–964. <https://doi.org/10.18240/ijo.2020.06.16>.