DIAGNOSTIC CAPABILITIES OF OPTICAL COHERENCE TOMOGRAPHY WITH ANGIOGRAPHY IN THE ASSESSMENT OF MICROCIRCULATORY DISORDERS OF THE OPTIC NERVE IN PATIENTS WITH ISCHEMIC OPTIC NEUROPATHY ASSOCIATED WITH TYPE 2 DIABETES MELLITUS

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Introduction. Ischemic optic neuropathy (ION) is one of the common causes of irreversible visual impairment, particularly in patients with type 2 diabetes mellitus. Microcirculatory disorders, endothelial dysfunction, and diabetic microangiopathy play a key role in the pathogenesis of this condition. In recent years, optical coherence tomography with angiography (OCT-A) has been considered a promising non-invasive method for assessing peripapillary and macular blood flow.

The aim of the present study was to evaluate the diagnostic capabilities of OCT-A in patients with ischemic optic neuropathy associated with type 2 diabetes mellitus.

The relevance of studying the diagnostic capabilities of OCT angiography in ischemic optic neuropathy associated with type 2 diabetes mellitus is determined by the need for early detection of microcirculatory disorders, assessment of the severity of ischemic damage, and prediction of disease progression. The use of this method makes it possible to deepen the understanding of the pathogenetic mechanisms of ischemic optic neuropathy under conditions of diabetic microangiopathy and to increase diagnostic accuracy at preclinical and early clinical stages.

Thus, the assessment of the diagnostic capabilities of OCT angiography in identifying microcirculatory disorders of the optic nerve in patients with ischemic optic neuropathy and type 2 diabetes mellitus represents an aĸtyal scientific and practical task in modern ophthalmology, which is of great importance for optimizing diagnosis, monitoring, and treatment strategies in this category of patients.

Aim of the Study. To evaluate the diagnostic capabilities of optical coherence tomography with angiography in detecting and characterizing microcirculatory disorders of the optic nerve in patients with ischemic optic neuropathy associated with type 2 diabetes mellitus.

Materials and Methods. The study included patients with clinically confirmed ischemic optic neuropathy associated with type 2 diabetes mellitus. The control group consisted of patients with ischemic optic neuropathy without diabetes mellitus. All participants underwent comprehensive ophthalmological examination, including visometry, perimetry, ophthalmoscopy, and standard optical coherence tomography.

OCT angiography was performed to assess microcirculation in the optic disc and peripapillary region. Vascular density parameters, the presence of hypoperfusion areas, and the degree of blood flow asymmetry were analyzed. The obtained data were statistically processed using methods of variation statistics.

Results. In patients with ischemic optic neuropathy associated with type 2 diabetes mellitus, a significant decrease in peripapillary capillary vessel density was revealed compared to the control group. OCT angiography enabled visualization of pronounced hypoperfusion areas that were not always detected using standard examination methods. The severity of microcirculatory disorders correlated with the degree of visual function impairment and changes in the retinal nerve fiber layer.

The study demonstrated that patients with ischemic optic neuropathy associated with type 2 diabetes mellitus exhibit pronounced structural and microcirculatory changes of the optic nerve and retina, which significantly differ from those observed in the control group.

According to standard optical coherence tomography, patients in the main group showed decreased visual acuity, thinning of the retinal nerve fiber layer, and changes in macular parameters, indicating ischemic damage to the optic nerve. In the control group, similar changes were less pronounced and generally were not accompanied by clinically significant visual impairment.

Analysis of OCT angiography data showed a significant reduction in peripapillary vessel density in the main group compared to the control group. These findings indicate marked microcirculatory disturbances in the optic nerve region in ischemic optic neuropathy associated with type 2 diabetes mellitus.

The obtained results confirm the high diagnostic value of OCT angiography for detecting ischemic changes and substantiate the necessity of early monitoring of vascular disorders in this group of patients.

Conclusion. The conducted study demonstrated that ischemic optic neuropathy in patients with type 2 diabetes mellitus is accompanied by pronounced structural and microcirculatory disturbances in the optic nerve and retina. Optical coherence tomography with angiography showed high diagnostic informativeness, enabling the detection of reduced capillary network density in the peripapillary and macular regions as well as hypoperfusion zones that are often not identified by standard diagnostic methods.

The use of OCT angiography provides an objective assessment of the severity of ischemic optic nerve damage, contributes to earlier diagnosis of ischemic optic neuropathy, and allows dynamic monitoring of disease progression. Inclusion of this method in the comprehensive examination of

patients with type 2 diabetes mellitus is advisable to optimize diagnostic strategy, ensure timely initiation of treatment, and improve visual prognosis.