

## Primary Open-Angle Glaucoma and Atherosclerosis in Representatives of Different Races

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### Abstract

**Purpose:** Study of lipid metabolism in comparison with patients with primary open-angle glaucoma (POAG) of different races living in the same territory.

**Methods:** Study of blood lipid profile in patients with POAG of European and Asian race of the Republic of Tyva, of these: 98 patients-Asians race (179 eyes) and 52 patients - European race (88 eyes). Among the 1st group, was 56 men (57.1%) and 42 women (42.9%), in group 2 was 24 men (46.2%) and 28 women (53.8%).

**Results:** Differences in the levels of atherosclerosis markers in the form of a predominance of the frequency of lipid profile disorders in Asians with POAG were revealed.

**Conclusion:** Atherosclerosis of blood vessels is more of a risk factor for the development of POAG in Asian race than in and European race living in the same conditions.

**Keywords:** Primary Open-Angle Glaucoma; Atherosclerosis of Blood Vessels; Indicators of Lipid Metabolism; Asian and European Race

It is known that primary open-angle glaucoma (POAG) is a disease of the elderly, in which vascular pathology and other chronic diseases I am a frequent background, and perhaps one of the causes of the disease. Rheological factors are very important for ensuring adequate blood supply to the optic nerve and retina. There are known facts about the deformation of red blood cells, increased aggregation and damage to their membranes, as well as cases of launching a cascade of agglutination, increased platelet aggregation in patients with glaucoma. The deposition of sludge red blood cells on the endothelium of small vessels leads to a violation of their integrity and underlies vasospasm, in turn, vasospasm can provoke additional ischemia. These phenomena are noted, both with increased and pseudo normal intraocular pressure. Hemodynamic disorders at a normal level of intraocular pressure occur in more than 88% of cases in patients with progressive glaucoma.

At the same time, in comparison with "non-progressive" glaucoma, violations were noted 3.5 - 5 times more often in the system of the aggregate state of the blood. The deterioration of local blood supply conditions is due by the state of general hemodynamics - the relationship between the development of glaucoma optical neuroretinopathy and functional insufficiency of cerebral circulation is high.

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The available data confirm the neurovascular theory of the pathogenesis of POAG, which suggests that vascular changes in the eyeball are due to general vascular pathology, most often - atherosclerosis of the vessels, which is one of the most common concomitant diseases in patients with POAG.

We studied the state of lipid metabolism in European and Asian race, patients with POAG living in the Republic of Tyva. Because of the studies, significant violations of lipid metabolism were revealed. Elevated levels of total blood cholesterol were significantly more often observed in patients with POAG - Asian - in 28.2% of cases compared with 21.1% in European race ( $p \leq 0.05$ ). The borderline level of total cholesterol in European race patients was observed in 57.7% compared with 60.5% in Asian patients. Normal levels of total blood cholesterol were detected only in 14.1% of Asian patients with POAG, in contrast to 18.4% in European race patients ( $p = 0.05$ ). Thus, hypercholesterolemia was in most patients with POAG, but in representatives of the Asian race it was noted more often - in 85.9% against 81.6% in European race patients ( $P \leq 0.05$ ). In addition, in Asian patients with glaucoma significantly more often than in European race patients, an increased level of plasma triglycerides was observed - in 71.4% of cases against 55.3%. An increased level of  $\beta$ -lipoproteins in was noted in 67.1% of Asian race cases, in European race - in 42.1%. The most frequent concomitant somatic pathology in patients with POAG for Asian and European race - residents of the Republic of Tyva were arterial hypertension and cerebrovascular disorders. Atherosclerosis of blood vessels is more of a risk factor for the development of POAG for Asian in than in European race living in the same conditions.

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