**Introduction**
Glaucoma is a multifactorial disease, resulting in a particular type of structural and functional damage to the optic nerve. From 1858, mechanical and ischemic factors are considered as more significant. Medical therapy, laser surgery and microsurgery became we can say able to controll intraocular pressure. But up to day, measures against ischemic factor are very poor though we know that-

1. Moderately raised intraocular pressure (IOP) does not develop optic nerve atrophy during 5-25 years of follow up period. Patients having raised IOP without any glaucomatic change in the optic nerve using lop lowering agents during 5 years of follow up period 4.4% were affected. On the other hand, those who were without medicaments 9.5% were affected with glaucoma.

2. 50% of glaucoma patients having normal IOP. Typical glaucomatic changes of the optic nerve head and field of vision can be developed and progress in normal tension glaucoma.

3. Increasing of the deficit of ocular blood supply is proportional to the development of primary open angle glaucoma (POAG).

4. Normalization of IOP does not always stabilize the condition of optic nerve head (ONH) and visual functions of the patients.

5. General hypotention accelerates the arising and progression of glaucomatic excavation of ONH.

6. In experiments, ischemia of the ONH leads to a blockage of axoplasmic circulation in optic nerve fibers as increased IOP influences over them.

7. Probably the mechanism of autoblood circulation in ONH is incomplete. Because nutrition of ONH occurs through chroidal vessels, having no autoregulation.

8. Angiography shows the deterioration of blood circulation in ONH of glaucomatic patients with normal IOP.

9. Treatment leading to improve blood circulation of the eyeball and ONH is helpful to stabilise glaucomatic process.

10. The word 'low target pressure' is now very popular. But actually it varies from person to person. Some how if it is achieved we do not know how long it will exist as tolerable.

11. In ischemia, glutamate is released which causes activation of NMDA receptors exist on ganglion cells and subset of amacrine cells resulting in the influx of calcium in cells and the generation of free radicals and thus causes ganglion cell death. Elevated glutamate levels exist in the vitreous humor of patients with glaucoma and NMDA receptors exist on ganglion cells.

So management of glaucoma includes controlling of IOP in a reasonable level as well as neuroprotection.

**Medical therapy for neuroprotection:**
In order to stabilize glaucomatic process by ocular hypotensive drugs, many authors prescribe preparates, which improve ocular blood circulation as a whole and ONH.

1. No-spa: Improves choroidal blood circulation which is correlated with broadening of visual field, arterial pressure decreases a mean value of 10 mm Hg. No-spa in combination with Proserin causes a favourable influence over the course of glaucomatic process.

2. Tablet Cavinton is used in unstable glaucoma. It has a high vasodilating influence on intraocular vessels because of which it improves light sensitivity, broadens field of vision of some patients with glaucoma. Cavinton does not increase IOP. So it can be used either in normal IOP or in moderate increase of IOP. It influence a little on systemic arterial pressure. A combination of...
Cavinton, Trental and Riboxin increases the effectivity of the treatment of glaucoma.

3. Trental is widely adopted to improve microcirculation and haemodynamics in glaucoma by increasing deformability of erythrocytes decreasing viscosity of blood, preventing adhesion and aggregation of thrombocytes. Trental has a moderate vasodilating effect without changing systemic arterial pressure. It broadens visual field, improves light sensitivity and increase rheographic co-efficient.

One should consider that the vasodilators cause generalised vasodilation leading to the reduction of systemic arterial pressure and thus decrease intraocular blood supply due to the reduction of perfussion pressure. It is proved that in case of decreasing arterial pressure not more than 10%, ocular blood supply is increased by vasodilaors and was not reduced even in a single case.

Surgical Methods of treatment of glaucomatic optic nerve atrophy
All methods of surgical treatment of glucomatic optic nerve atrophy are devided in 4 groups.

1. Redistribution methods of blood supply in ocular region
   Tying of external carotid artery has some drawbacks.
   a) Increasing of blood volume in the system of internal carotid artery can cause a rupture of it’s branches which had a sclerotic change.
   b) Angiographic investigation is risky for the patients over 60 years old before surgery.
   c) The operation is contradicated to those who has a pathological change in internal carotid artery.

Intersection of facial branches of ocular artery-frontal, supraorbital and branches of external carotid artery-angular artery. 8 years follow up period of 15 patients confirmed the possibility of improvement and stabilization of visual functions of those who have different vascular pathologies of the eye. Indications of vasoreconstructive surgery is defined by ultrasonic doplerography. It is indicated to only 56.2% cases.

2. Methods of incision of durameter and scieral canal of the optic nerve.
   a) Parabulbar way which may cause serious damage of retinal and optic nerve blood circulation.
   b) Transvitreal and extraocular approach to the optic nerve. In the first method, at the meridian of 10 or 2 o'clock 5 mm from the limb, scalpel Sato was inserted through the incision and made a discission of sderal ring at the region without vessels of 1 mm depth. Extra ocular approach to the optic nerve is more safe and simple. After an incision of the conjunctiva in internal angular region of the eye and cutting the internal rectus muscle, the authors turn the eyeball outwards and by the scalpel Sato made discission on the scieral ring up to 4 mm with 1 mm depth. The results of analysis of the materials of 32 patients is that visual acuity (VA) increased in 1 7 patients, field of vision broadened in 31 cases, 8 of them did not have central field of vision before treatment. Field of vision was broadened basically in temporal and lower nasal quadrants. This effect is connected with the fact that sceral canal and lamina cribrosa are the main points of optic nerve fiber damage where the nerve fibers and central ocular vessels are very compactly arranged.

3. Revascularization methods of posterior segment of the eyeball
   Donor's scieral band and pieces of patient's tenon were inserted to the posterior segment of the eyeball, in addition on the sclera, 12-18 mm from the limb diathermocoagulation was applied. It helps formation of collaterals between the internal and external carotid systems and thinning of the sdera and appearing of new vessels. Improvement and stabilization of visual functions were found in most of the patients with glaucoma. Thus combined antiglaucomatic tropic operations (CATO) was also resulatitive. Medial third of superior or external rectus mascie was transplanted under sclera of the patient with far advanced glaucoma. Stabilization was achieved in majority of the patients of a 3-6 years follow up period. The mentioned method was combined with sinusotrabeculectomy in far advanced glaucoma. In contrast to the above method,
part of external rectus muscle of 1/3 width was inserted to the intrascleral tunnel leading to the posterior pole of the eyeball was done on 16 mm from the limb by 10-12 incision. Six months follow up period of 48 cases after operation, showed it's appeaciancy to sinusotrabeculectomy.

4. Subtenon implantation of collagenous infusion system (SICIS)
Nesterov A.P. and Basinsky S.N. at first proposed this operation. Infusion of drugs 2 times a day for 6-8 days helps to create a constant concentration of drugs in the region of posterior segment of the eye ball and optic nerve head and achieve positive effect. *Technic of surgery*: A collagenous sponge implant slice of 30 x 5 mm is prepared. The slice is moistened in isotonic solution of NaCl folded and made a pore where it was bended. Through the pore a plastic tube is inserted and by a stitch, it is fixed to the sponge. Length of the tube 10-11 mm, diameter 1.~ mm. Free end of the tube is closed by a cork. After local anaesthesia in the upper lateral or medial quadrant of the eyeball made an incision on conjuctiva and subtenon capsule with a length of 6-7 mm, 6-7 mm from the limb. With the help of palette-knife a canal is formed in the subtenon space towards optic nerve. Implanting sponage with tube was inserted by a bent forceps following the curvature of the eye ball through the formed canal to it's posterior segment. Continuous stitch was done on the conjunctiva and tenon capsule. The free end of the plastic tube was turned to the forehead and fixed by leucoplast. Medicaments used: Xantinol nicotinatis 1 5%-0.3 ml. Trenital 2%-0.3ml and Dexamethason 4%-0.2ml. The tube is removed after course of treatment. Collagenous sponge is absorbed in a priod of 1-1.5 month. Mean VA before SICIS was 0.33, after 0.47, which was the same after 4-5 months. During the whole follow up period VA was 42.4% more than it's initial value. Visual acuity was increased in 1 5 eyes (78.9%) from 19 after SICIS and after 4-5 months in 15 eyes (88%) from 17 investigated patients VA was improved more and in 2 cases VA was decreased up to initial value.

SICIS caused a significant change in VF. Mean sum of degrees in 8 radius before operation was 201 (66-252), after operation and treatment 250 (78-298) i.e. this value was increased up to 24.3% from initial value which was not changed up 4-5 months. VF was improved in 1 7 cases of 1 9 eyes (89.5%). After 4-5 months, in 1 5 cases (88.2%) Of 1 7 investigated eyes VF was not changed and in 2 cases, it decreased up to initial value.

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