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## OPTIMIZATION OF INTEGRATED TREATMENT OF PATIENTS OF PRIMARY GLAUCOMA

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**Abstract. Relevance.** Glaucoma worldwide is one of the leading causes of low vision and blindness, and therefore disability. The progression of the glaucomatous process (neuropathy) is chronic ischemia and hypoxia associated with hemodynamic deficiency and regional and systemic nature. **Material and methods.** 77 patients (77 eyes) with stage III POAG were observed. Of these, 42 men and 33 women aged 53–78 years. We divided patients into two groups, depending on the therapy. All patients were hospitalized. A comprehensive examination included general phththalmological examinations: visometry, perimetry, gonioscopy, biomicroscopy, ophthalmoscopy, tonometry, tonography, and retoplegia of the retina vessels. **Research results and discussion.** In the treatment of the advanced stages of glaucoma, the use of laser trabeculoplasty in the subsequent complex conservative treatment with the administration of the retinalamine subconjunctiva for 10 days is pathogenetically justified.

**Key words:** POAG, laser trabeculoplasty, Retinalamin

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## ОПТИМИЗАЦИЯ КОМПЛЕКСНОГО ЛЕЧЕНИЯ ПАЦИЕНТОВ ПЕРВИЧНОЙ ГЛАУКОМЫ

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**Аннотация. Актуальность.** Глаукома во всем мире занимает одно из лидирующих мест среди причин слабовидения и слепоты и, соответственно, инвалидности. Прогрессированием глаукоматозного процесса (нейропатии) является хроническая ишемия и гипоксия, связанная с дефицитом гемодинамики, регионарного и системного характера. **Материал и методы.** Наблюдались 77 пациента (77 глаз) с III стадией ПОУГ. Из них 42 мужчины и 33 женщины в возрасте 53–78 лет. Пациентов мы разделили на две группы в зависимости от проводимой терапии. Все больные находились на стационарном лечении. В комплексное обследование были включены общеофтальмологические исследования: визометрия, периметрия, гониоскопия, биомикроскопия, офтальмоскопия, тонометрия, тонография, доплерография сосудов сетчатки. **Результаты.** В лечении далеко зашедших стадиях глаукомы патогенетически обоснованным является применение лазерной трабекулопластики с последующим комплексным консервативным лечением с введением в подконъюнктиву Ретиналамина в течение 10 дней.

**Ключевые слова.** ПОУГ, лазерная трабекулопластика, ретиналамин

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## БИРЛАМЧИ ГЛАУКОМАЛИ БЕМОРЛАРНИ КОМПЛЕКС ДАВОЛАШНИ ТАКОМИЛЛАШТИРИШ

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**Аннотация. Долзарблиги.** Глаукома дунёда кўзи ожизлик ва кўрликка, натижасида эса ногиронликка сабаб бўлувчи касалликлар орасида етакчи ўринлардан бирини эгаллайди. Глаукоматоз жараённинг ривожланиши (нейропатия) сурункали ишемия ҳамда маҳаллий ва тизимли характерга эга бўлган, гемодинамик етишмовчилик билан боғлиқ гипоксия. **Материаллар ва усуллар.** III босқич БОБГ билан 77 бемор (77 кўз) кузатилди. Улар 53–78 ёшдаги 42 эркак ва 33 аёл. Биз беморларни ўтказилган даволаш чораларига қараб икки гуруҳга ажратдик. Барча беморлар стационар даволашда бўлган. Комплекс текширув умумий офтальмологик тадқиқотлар: визометрия, периметрия, гониоскопия, биомикроскопия, офтальмоскопия, тонометрия, тонография, тўр парда томирларнинг доплерографияси. **Натижалар.** Глаукоманинг ривожланган босқичларини даволашда лазер трабекулопластика жаррохлик амалиётидан кейин консерватив комплекс даволаш режасида 10 кун давомида 0, 5 млдан конъюнктива остига Ретиналаминни юбориш патогенетик жиҳатдан ўзини асослайди.

**Калит сўзлар:** БОБГ, лазерли трабекулопластикаси, Ретиналамин

### Иқтибос учун:

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**Relevance.** Today, glaucoma worldwide occupies one of the leading places among the causes of low vision and blindness and, accordingly, disability [1, 6, 8, 9]. Despite numerous studies and achievements in the treatment of primary open-angle glaucoma (POAG), the instability of the glaucoma process remains the most relevant in ophthalmology [3, 5, 7, 9].

A number of authors have developed many effective and different methods of treating open-angle glaucoma, but most of these studies are designed to reduce eye pressure, which consists in drug treatment (instillation of hypotensive eye drops), laser trabeculoplasty (which consists in improving the drainage of eye fluid through the trabecular system) and surgical intervention [2, 4].

Laser treatment of open-angle glaucoma is widely used all over the world today. A randomized clinical trial conducted in the United States (the LiGHT Study) has demonstrated that laser therapy, specific selective laser trabeculoplasty (SLT), is a suitable and effective treatment for the initial stages of open – angle glaucoma. It was noted that indeed in this study, 74% of patients who underwent laser trabeculoplasty did not need additional eye drops for the first three years to maintain the target eye pressure. It was also noted that regular monitoring of the patient by an ophthalmologist plays an important role in stabilizing IOP [3, 5, 7, 9].

The laser works by targeting the tissues (trabecular networks) that drain fluid inside the eye and improve drainage, thereby reducing eye pressure. However, it is important to understand that laser exposure wears out over time, and the laser is not a «cure» for glaucoma [3, 4, 5].

The results of numerous studies suggest that the main causes of instability and progression of the glaucomatous process (neuropathy) are chronic ischemia and hypoxia associated with hemodynamic deficits of both a regional and systemic nature [1, 5, 9, 10, 11].

In this regard, we have proposed a comprehensive method for the treatment of POAG, which consists in laser correction of IOP and drug treatment-the introduction of Retinalamine under the conjunctiva. Retinalamine is a complex of water-soluble polypeptide fractions with a molecular weight of no more than 10,000 Da. It provides stimulation of tissue repair, as well as a stimulating effect on photoreceptors and cellular elements of the retina, improves the functional interaction of the pigment epithelium and external segments of photoreceptors in dystrophic changes, accelerates the restoration of retinal light sensitivity. Normalizes vascular permeability, stimulates reparative processes in diseases of the retina. The drug improves the metabolism of eye tissues and normalizes the functions of cell membranes, improves intracellular protein synthesis, regulates the processes of lipid peroxidation, and helps optimize energy processes [1, 5].

**Purpose of this study.** The aim of our work was to evaluate the results of complex treatment of advanced stage (stage III) POAG using retinalamine.

**Material and methods.** At the Department of Ophthalmology of TDSI, we observed 77 patients (77 eyes) with stage III POAG. 42 of them were men and 33 women aged 53–78 years. Concomitant pathology in these patients was: 6 patients with myopia, 9 patients with cataracts; among general somatic diseases: hypertension was in 11 patients, type 2 diabetes in 1 patient.

After laser trabeculoplasty, cataract progression was observed in 3 patients who underwent FEC.

We divided the patients into two groups, depending on the therapy performed. All patients were hospitalized. The first (main) group consisted of 39 patients (39 eyes) who underwent laser trabeculoplasty. On the next day, traditionally conservative complex treatment included retinalamine (lyophilizate was dissolved in 0.5 ml of 0.5% novocaine solution) at a dose of 0.5 ml, which was administered under the conjunctiva of the eye in the lower-outer segment.

The second (control) group included 38 patients (38 eyes) who also underwent laser trabeculoplasty, who also began to undergo a traditionally conservative complex treatment on the next day, which included retinalamine (lyophilizate was dissolved in 0.5 ml of 0.5% novocaine solution) at a dose of 0.5 ml of parabolbarno. The course of treatment of all patients was 10 days.

Visual functions were studied in patients of both groups before and after treatment (at day 10, 3, 6, and 12 months). The comprehensive examination included general ophthalmological studies: visometry, perimetry, gonioscopy, biomicroscopy, ophthalmoscopy, tonometry, tonography, dopplerography of retinal vessels.

**Research results and discussion.** Before the start of complex treatment, the visual acuity indicators in the main and control groups were  $0.29 \pm 0.07$  and  $0.28 \pm 0.06$ , respectively. The IOP values in group 1 averaged  $38.4 \pm 0.11$  mm Hg, and in group 2 –  $36.5 \pm 0.11$  mm Hg. We evaluated the peripheral field of vision (PEF) parameters based on the total visual field boundaries (SPF) for 8 meridians. In patients of group 1, the GSPD was  $203 \pm 5.3^\circ$ , and in group 2, it was  $215 \pm 5.8^\circ$ .

Pretreatment Doppler parameters were  $19.1 \pm 0.14$  cm/s in the main group and  $20.6 \pm 0.12$  cm/s in the control group.

On the 10th day after the operation, there was no significant increase in visual acuity in both study groups, and there was also a stabilization of the IOP level, which averaged  $16.2 \pm 0.13$  and  $17.2 \pm 0.14$  mm Hg, respectively.

To identify the evaluation of the results of our complex treatment, the indicators of GSPD for 8 meridians, as well as the blood flow rate in HA, were more informative. We found that in patients of the main group, the average GPHD increased to  $292 \pm 7.3^\circ$

( $p < 0.05$ ), and in the control group – to  $285 \pm 7.1^\circ$  ( $p < 0.05$ ). Blood flow velocity in HA in patients in the main group increased to  $29.1 \pm 0.21$  cm / s, in the control group this indicator was  $24.4 \pm 0.11$  cm / s. At the 3rd month of follow-up, the level of IOP in the main group was  $18.3 \pm 0.09$  mm Hg, in the 2nd group –  $18.6 \pm 0.11$  mm Hg, GPP in the 1st group increased to  $342 \pm 8.3^\circ$ , in the 2nd group – to  $268 \pm 6.7^\circ$ . The blood flow velocity in HA in groups 1 and 2 was  $29.3 \pm 0.17$  and  $23.5 \pm 0.11$  cm / s, respectively.

After 6 months, in patients of the 1st (main) group, the level of IOP was  $17.6 \pm 0.12$  mm Hg, GPP was  $316 \pm 8.2^\circ$ , and the blood flow rate in the HA was  $26.5 \pm 0.15$  cm / s ( $p < 0.05$ ), which indicates the stabilization of the glaucoma process in 95% of cases. In the 2nd (control) group for this period of observation, the IOP level was  $19.2 \pm 0.11$  mm Hg, GSPD –  $239 \pm 6.4^\circ$ , blood flow rate in GA –  $21.7 \pm 0.09$  cm / s ( $p < 0.05$ ).

At the 12th month of follow-up, we detected

progression of glaucomatous neuropathy in 12% of patients, which is associated with decompensation of the IOP level. In the control group, the OS was  $0.31 \pm 0.04$  ( $p < 0.001$ ), the IOP level was  $19.2 \pm 0.13$  mm Hg, the PPD was  $223 \pm 6.4^\circ$ , and the blood flow rate in the HA decreased to  $22.2 \pm 0.12$  cm/s.

After 1 year, glaucoma stabilization was achieved in 89% of cases in the main group and 68% in the control group.

Thus, as the results of treatment of patients in the main group showed, the combination of laser treatment and subconjunctival administration of retinalamine was a highly effective method and led to stabilization of the glaucoma process in 89% of cases.

**Conclusion.** In the treatment of advanced stages of glaucoma, the use of laser trabeculoplasty followed by complex conservative treatment with the introduction of retinalamine into the subconjunctiva for 10 days is pathogenetically justified

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