

Possibilities of adaptive bioresonance therapy  
in the treatment of patients with primary open-angle glaucoma  
T.A. Malinovskaya, L.O. Bolotova, V.N. Ermakova, A.N. Ivanov (Federal  
State Institution "Helmholtz MNII GB" MHSD RF, Moscow, Russia)

The term "glaucoma" is understood as a whole group of diseases of various etiology, united by two signs: an increase in intraocular pressure above the individual tolerant level and a characteristic optic neuropathy. According to the WHO, there are currently about 65-70 million patients with glaucoma in the world, of whom about 9 million are blind in both eyes. and the visually impaired more than doubled, reaching 78%.

Distinguish between congenital, primary and secondary glaucoma in adults. Primary glaucoma has a multifactorial genesis and is associated with involutionary, age-related changes in the eye. Of all patients with glaucoma, primary open-angle glaucoma (POAG) is observed in 70%. Risk factors affecting the incidence of POAG include old age, heredity, diabetes mellitus, impaired glucocorticoid metabolism, arterial hypotension, myopic refraction, early presbyopia, etc.

POAG remains one of the leading medical and social problems of ophthalmologists due to its high prevalence, late diagnosis, severity of the course and outcomes. The number of patients with POAG who became blind in both eyes reached 4.5 million, which was the reason for the inclusion of this pathology in the list of priority eye diseases of the WHO.

Despite the obvious progress in ophthalmology, the treatment of glaucoma remains a complex and not fully understood problem.

The accumulated knowledge in the field of medical and surgical treatment of glaucoma allows in most cases to achieve the normalization of ophthalmotonus. However, a decrease in intraocular pressure by itself often does not lead to the expected stabilization of the patient's visual functions. The reason for this is the complex and multifactorial pathogenesis of glaucomatous optic neuropathy. At a certain stage of the disease, sanogenetic mechanisms become ineffective due to a cascade of pathological reactions and multiple vicious circles leading to apoptosis of retinal ganglion cells. As a rule, timely and pathogenetically justified treatment is required to interrupt them.

#### Materials and research methods

A total of 25 patients (49 eyes) with primary glaucoma were observed at the age from 58 to 85 years, on average -  $74.1 \pm 1.5$ ; women - 17, men - 8.

There were 38 eyes with POAG, of which 8 were with the initial stage, 25 were developed, and 5 were far advanced. There were 11 eyes with narrow-angle glaucoma (with initial - 3, developed - 4, advanced - 4). In all patients, the level of intraocular pressure was normal (fluctuations in the range of 16-22 mm Hg during the entire observation period), which was due to antiglaucoma surgery and / or the appointment of local antihypertensive therapy.

Antiglaucoma surgery was performed on all eyes, with a far advanced stage (9) and in two - with a developed one. Phacoemulsification was performed in 12 patients (13 eyes).

BRT was prescribed on an outpatient basis, 2-3 times a week, a total of 8-10 procedures, on the device for adaptive bioresonance therapy for BAP and BAZ "IMEDIS-BRT-A". When carrying out multiresonant magnetotherapy, the frequencies of spontaneous bioelectric activity of organs and tissues taken from databases are used. data of R. Voll, P. Schmidt, R. Rife, and affecting the organ of vision. The duration of the session is 20-40 minutes.

The functional state of the eyes, including checking the acuity and visual field, (dynamic and static perimetry) was determined before the appointment of BRT and 1, 2, 3 and 6 months after its termination. At the same time intervals, biomicroscopy, ophthalmoscopy were performed, and IOP was examined. In addition, ophthalmotonus was measured in 15 patients before the first and last procedures and 15, 60 and 120 minutes after their completion.

Visual acuity was determined with ametropia correction on a Karl Zeiss test mark projector. The peripheral field of view (kinetic perimetry) was studied at the hemispherical perimeter of Karl Zeiss (Germany) and was calculated in total along 8 meridians. The size of the test object and the characteristic of illumination, as a rule, amounted to 6 in total (the advanced age of the absolute majority of patients was taken into account).

Static perimetry was carried out on a Perymat 206 computer perimeter (Rodenstock, Germany) using a program that allows evaluating the brightness sensitivity at 133 points within 30 and 80 from the center with a computer calculation of the absolute brightness sensitivity.

Intraocular pressure was measured with a 10g Maklakov tonometer.

#### Results and conclusions

During the observation period, according to biomicroscopy and ophthalmoscopy, the state of the optical media of the eye and fundus did not change.

The dynamics of IOP within two hours after the first and last BRT procedure is presented in table one.

Table 1

The effect of BRT on IOP in glaucoma patients

Procedures	n	Research time in minutes						
		The original	fifteen	R	60	R	120	R
The first	29	20.17 ± 0.15	19.21 ± 0.41	<0.05	19.51 ± 0.40	<0.1	19.11 ± 0.35	> 0.02
The last		19.95 ± 0.11	18.62 ± 0.35	<0.02	19.17 ± 0.36	> 0.1	18.93 ± 0.33	> 0.05

n is the number of eyes, p is the coefficient of reliability

As you can see from the table. 1, on average for the group, BRT causes a significant decrease in ophthalmotonus or a tendency to decrease it in the first hours after the procedure.

In general, in the group, visual acuity changed insignificantly, being  $0.72 \pm 0.04$  before treatment, and after 6 months (in 47 eyes) -  $0.75 \pm 0.05$  ( $t = 0.5$ ), increased by 0.05 - 0.2 in 13 eyes (27.7%), decreased in 4 (8.5%), in the rest (30 eyes) it remained the same, which is 63.8% of the total number of patients.

Expansion of the peripheral boundaries of the field of view averaged  $25 \pm 3.9$ - $4.0 \pm 3.1$  at different periods of the study, which is reliable ( $p < 0.02-0.01$ ).

For the lack of dynamics of the field of view, its changes were taken within - 10 -fifteen . The narrowing of the visual field, noted in 1-3 eyes (at different periods of observation), did not exceed 10 -fifteen , which is not reliable ( $p > 0.2-0.7$ ).

A decrease in the number of absolute cattle was also noted in the majority of patients at all stages of the examination (including patients with stage 3 glaucoma).

It is necessary to emphasize the absence of local discomfort and general side effects during the entire course of treatment and during the 6-month follow-up period.

In summary, it can be noted that BRT causes neuroprotective effects in more than half of the patients.

#### Bibliography

1. Gotovsky M.Yu., Perov NF, Chernetsova LB Bioresonance therapy. - M.: IMEDIS, 2008.- 174 s.
2. Libman E.S. Epidemiological characteristics of glaucoma // Glaucoma. - 2009. - No. 1. - Application. - S. 2-3.
3. Nesterov A.P. Glaucoma. - M., 1995. -- 188 p.
4. Samokhin A.V., Gotovsky Yu.V. Electropuncture diagnostics and therapy by the method of R. Voll. - M.: IMEDIS, 1995. - S. 359-367.
5. Shmyreva V.F., Mostovoy E.N., Shmeleva O.N. Pathogenetic substantiation of the effect decompression operations on the scleral canal of the optic nerve in primary glaucoma // Bulletin of the Russian Academy of Medical Sciences. - 2003. - No. 2. - S. 20-22.
6. Hazin R., Hendrick AM, Kahook MY Primary open-angle glaucoma: diagnostic approaches management. // J. Natl. Med. Assos. - 2009. - Vol. 101. - No. 1. - P. 46-50.
7. Morell F. Die Mora.-Therapie.-Friesen heimMed-Tronic. - 1978. -- 50 p.
8. Quigley HA, Broman AT The number of people with glaucoma worldwide 2010-2020 // Br. J. Ophthalmol. - 2006. - Vol. 90. - No. 3. - P. 253-254.

T.A. Malinovskaya, L.O. Bolotova, V.N. Ermakova, A.N. Ivanov Possibilities of adaptive bioresonance therapy in the treatment of patients with primary open-angle glaucoma // XVII