Treatment of patients with glaucomatous optic neuropathy using traditional methods medicine and physiotherapy

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RESUME

Glaucoma is the leading cause of blindness and visual impairment. The accumulated knowledge in the field of medicamental and surgical treatment of glaucoma is targeted to normalize ophthalmotonus often don't lead to the expected stabilization of the patient s visual function. The reason for this is complex and multifactor pathogenesis of glaucomatous optic neuropathy. This requires active neuroprotective therapy.

The aim of this paper is to summarize the results and advantages of clinical use of traditional medicine techniques and physiotherapy in the treatment of patients with glaucomatous optic neuropathy.

Keywords: ophthalmology, traditional medicine, reflextherapy, bioresonance therapy, physiotherapy, glaucoma, glaucomatous optic neuropathy.

SUMMARY

Glaucoma is the leading cause of blindness and low vision. The accumulated knowledge in the field of medical and surgical treatment of glaucoma, aimed primarily at normalizing ophthalmotonus, 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. In this regard, the need for active neuroprotective therapy is obvious.

The aim of the work was to summarize the data on the use of methods of traditional medicine and physiotherapy in the treatment of patients with glaucomatous optic neuropathy.

Key words: ophthalmology, traditional medicine, reflexology, bioresonance therapy, physiotherapy, glaucoma, glaucoma optic neuropathy.

INTRODUCTION

Glaucoma is the leading cause of blindness and low vision. According to the WHO, at present there are about 65-70 million patients with glaucoma in the world, of whom about 9 million are blind in both eyes. 7 per 100,000 of the adult population, and more than 150,000 people with disabilities, and every fifth visually impaired person is blind due to glaucoma [1].

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 characteristic optic neuropathy. Distinguish between congenital, primary and secondary glaucoma in adults.

Congenital glaucoma (Fig. 1) is often combined with other eye abnormalities: sclerocornea, Frank-Kamenetsky, Sturge-Weber syndromes, Ricklinghausen's disease, Axenfeld-Rieger, Peters, etc. anomalies. In these cases, in contrast to hydrophthalmos, intraocular pressure (IOP) more often increases in the second decade of life and is called adolescent glaucoma [2].

Primary glaucoma has a multifactorial origin and is associated with involutionary, age-related changes in the eye. Of all patients with glaucoma, the 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 ophthalmology, due to its high prevalence, late diagnosis, severity of the course and outcomes. The number of POAG patients who were blinded 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 [3].

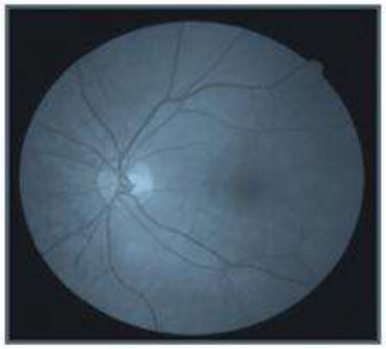
Rice. 1. Buphthalmos (pathological increase in the size of the eyeball), megacornea (increase the size of the cornea), clouding of the cornea of the right eye in congenital glaucoma.

Secondary glaucoma is a complication of a number of eye diseases: acute and chronic inflammatory processes (uveitis), vascular diseases, tumors, degenerative changes in the tissues of the eye, injuries, as well as developmental abnormalities (microphthalmos, aniridia, flat iris).

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 in 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.

The basis for the diagnosis of glaucoma is the identification of specific changes in the structure and function of the optic nerve head (Fig. 2, 3), the study of visual fields (Fig. 4, 5), measurement of intraocular pressure (tonometry, elastotonometry) and the study of indicators of the outflow of intraocular fluid (tonography).

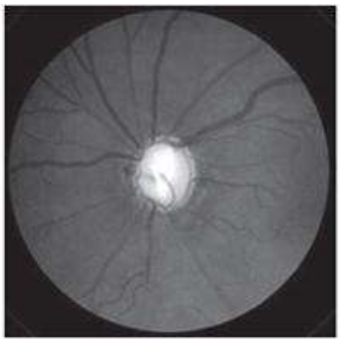


Rice. 2. The fundus of a healthy person.

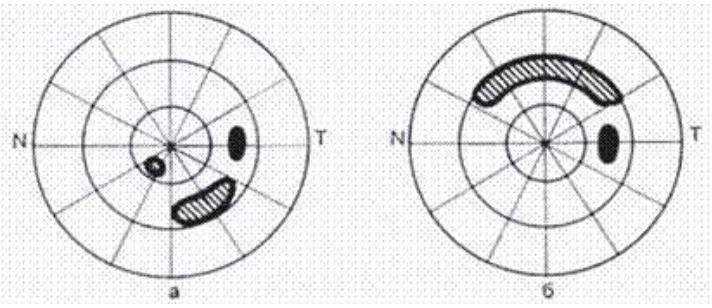
MATERIALS AND METHODS

In our department, for the treatment of patients with GON, magnetotherapy and magnetophoresis of drugs that improve blood flow and metabolic processes in the tissues of the eye are widely used.

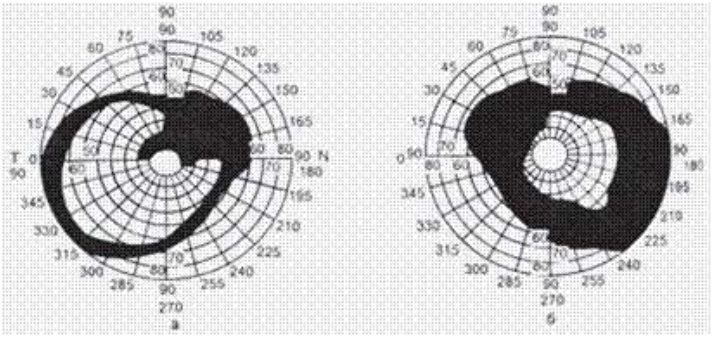
Under the influence of magnetic fields (MF), the number of functioning capillaries increases, tissue blood flow is significantly accelerated, and microcirculation improves. Due to the humoral-reflex mechanism of action, a general reaction of the body to the impact of MP is noted. Sensitive to MP and central nervous system (pituitary gland, hypothalamus, cerebral cortex, less - thalamus and hippocampus). All of the above ensures the normalization of hemo- and neurodynamics, as well as an increase in the adaptive reserves of the endocrine and immune systems. Magnetophoresis is carried out on the "Pole-3" apparatus with an exposure intensity of 10 mT and an exposure time of 10 minutes. The course of treatment consists of 10 daily sessions [4].



Rice. 3. Regional excavation of the optic nerve disc with advanced glaucoma.



Rice. 4. Defects in the central part of the visual field at the initial stage of glaucoma, identified by the method of campimetry: a - paracentral relative scotomas; b - arc relative scotoma.



Rice. 5. Changes in the peripheral boundaries of the visual field in glaucoma (kinetic perimetry): a - Narrowing of the visual field from the nasal side; b - concentric narrowing.

One of the methods of drug delivery to the posterior pole of the eye is endonasal electrophoresis. In GON, riboflavin-mononucleotide 1%, semax 0.1% [11], no-spa 2%, proserin 0.05%, retinalamin, cortexin are widely used. Electrophoresis is carried out on a domestic Potok-1 galvanizer with a current strength of up to 1mA, the procedure time varies from 10 to 15 minutes, depending on the patient's tolerance, the course consists of 10 daily sessions. The polarity is set in accordance with the developed tables.

With relatively intact visual functions, the method of indirect or transcutaneous electrical stimulation (PES) of the optic nerve, proposed by E.B. Kompaneets et al. in 1989. The method is based on the possibility of conducting electrical stimuli of certain parameters through conductive tissues (eyelids, eyeball with all its membranes) to the retina and optic nerve. BSES is carried out using the device "Electrostimulator ophthalmic two-channel ESO-2" according to the standard method [5]. There are no more than 5 sessions per course. The BSEC method has significant advantages over the direct ES methods and, above all, in the ease of use. This is its atraumatic nature, ease of repeated courses on an outpatient basis, expansion of indications for use in different age groups. In the stimulation zone, under the influence of an electric current, the restoration of the functions of generation and conduction of nerve impulses is noted due to the polarization of membranes, improvement of metabolic and energy processes in the nervous tissue by increasing the breakdown and renewal of membrane phospholipids, intensification of transport and metabolic processes in axons, glial and connective tissue elements. Experimental studies have shown that in ES of the optic nerve, there is an increase in intercellular potassium and a decrease in the concentration of membrane calcium, and this contributes to an increase in ion fluxes in the visual pathway and quantitative growth of glial cells [6]. improvement of metabolic and energy processes in the nervous tissue by increasing the breakdown and renewal of membrane phospholipids, intensification of transport and metabolic processes in axons, glial and connective tissue elements. Experimental studies have shown that in ES of the optic nerve, there is an increase in intercellular potassium and a decrease in the concentration of membrane calcium, and this contributes to an increase in ion fluxes in the visual pathway and quantitative growth of glial cells [6]. improvement of metabolic and energy processes in the nervous tissue by increasing the breakdown and renewal of membrane phospholipids, intensification of transport and metabolic processes in axons, glial and connective tissue elements. Experimental studies have shown that in ES of the optic nerve, there is an increase in intercellular potassium and a decrease in the concentration of membrane calcium, and this contributes to an increase in ion fluxes in the visual pathway and quantitative growth of glial cells [6].

The search for new ways to stimulate the optic nerve forced us to turn to the methods of traditional medicine, in particular, to acupuncture. Experimental and clinical studies have shown that exposure to acupuncture points (TA) enhances the release of endogenous opioid-like biologically active compounds related to the type of neurotransmitters and neuromodulators (Chung SH, Dickenson A., 1980), which are directly involved in the transmission of nerve impulses and in processing of incoming information (Schuiz R. Et al., 1981). Neuropeptides have a modulating effect on the functioning of other neurotransmitters, such as norepinephrine, dopamine, serotonin, etc. (Kalyuzhny L.V. et al., 1987). Due to this, they can finely and differentially regulate the excitability of neurons (Shevelev O.A. et al., 1986).

The segmental reaction to the introduction of the needle into the acupuncture point is determined by the segmental structure of the body and the features of the somato-visceral innervation. The reaction of the spinal cord segment at the level of TA and adjacent segments causes the excitation of autonomic connections with the corresponding vessels, muscles, internal organs.

With a generalized reaction, the flow of afferent stimuli along specific and nonspecific pathways reaches the subcortical and cortical structures, including the reticular formation, the limbic system, the hypothalamic-pituitary system, which determines the generalization of nervous excitement and the inclusion of neuro-humoral mechanisms of adaptation and self-regulation [7– eleven].

The effects of acupuncture include a change in the ratio of the activity of various neurochemical processes in individual brain structures and in the complex of brain structures that implement this systemic function. The correct selection of TA and methods of action allows you to purposefully affect neurochemical processes in certain brain centers and cause the desired changes in regulated functions (Bogdashkin N.G. et al., 1987, Stoyanovskiy D.N., 1987, Varnakov P.Kh. et al. , 1988).

In recent decades, in patients with optic nerve atrophy, including glaucomatous genesis, bioresonance (BRT) and multiresonance therapy has been successfully used, which helps to activate the functions of nerve fibers and neurons of the optic

an analyzer in a state of parabiosis, which does not allow responding to drug treatment and other types of exposure. This method has an anti-inflammatory, immunomodulatory, trophic effect, improves the state of the body's adaptive reserves, and increases blood flow [12–15].

BRT is performed on an outpatient basis 2-3 times a week using the device for adaptive bioresonance therapy "IMEDIS-BRT-A". Therapy with specific frequencies is carried out on the apparatus for exogenous bioresonance therapy "MINI-EXPERT-DT". The course of treatment consists of 10 procedures. The duration of the session varies, depending on the program, from 20 to 40 minutes.

For exogenous BRT, frequencies of spontaneous bioelectric activity of organs and tissues are used, taken from the databases of R. Voll, P. Schmidt, R. Rife and affecting the organ of vision. For the treatment of GON, frequencies are used: 70 Hz, 70.5 Hz, 93.5 Hz, 94.5 Hz, 95 Hz.

We present an analysis of the results of treatment of patients with GON by the method of bioresonance therapy.

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

There were 38 eyes with POAG, of which with the initial stage - 8, developed - 25, far gone - 5 eyes. There were 11 eyes with narrow-angle glaucoma (with initial - 3, developed - 4, far-backed - 4). In all patients, the level of intraocular pressure was normal (fluctuated within 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 advanced stages (9) and in two with advanced ones. Phacoemulsification was performed in 12 patients (13 eyes).

Endogenous BRT was prescribed on an outpatient basis, 2-3 times a week, for a total of 8-10 procedures, using an adaptive bioresonance therapy apparatus for BAP and BAZ "IMEDIS-BRT-A". When carrying out exogenous BRT, we used the frequencies of spontaneous bioelectric activity of organs and tissues, taken from the databases of R. Voll, P. Schmidt, R. Rife, and affecting the organ of vision. The duration of the session was 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 10 g Maklakov tonometer.

RESULTS AND ITS DISCUSSION

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

Expansion of the peripheral boundaries of the visual field averaged 25 ° ± 3.9 ° - 40 ° ± 3.1 ° at different periods of the study, which is significant (p <0.02–0.01).

For the lack of dynamics of the field of view, its changes in the range of 10 ° –15 ° were taken.

The narrowing of the visual field, noted in 1–3 eyes (at different periods of observation), did not exceed 10 ° –15 °, which is not significant (p> 0.2–0.7).

The effect of BRT on the state of the peripheral visual fields are given in table. one.

Table 1

The effect of BRT on the dynamics of the peripheral boundaries of the visual field in patients with primary glaucoma

Сроки наблюдения в мес.	«+» эффект					«0» эффект					«-» эффект				
	n		%	Сост. поля зрения		n		%	Сост. поля зрения		n		%	Сост. поля зрения	
	До лечения	После лечения		До лечения	После лечения	До лечения	После лечения		До лечения	После лечения	До лечения	После лечения		До лечения	После лечения
1	49	41	83,7	426±8,8° t = 2.6	451±8,3° p < 0.02	49	5	10,2	450±9,5°	455±9,3°	49	3	6,1	437±4,6°	428±3,9° p > 0.7
2	45	32	71,1	419±8,6° t = 2.8	451±7,4° p < 0.01	45	11	24,4	465° p < 0.01	465°	45	2	4,4	430±10,0°	415±2,5° p > 0.2
3	47	33	70,2	416±11,0° t= 2.7	456±9,4° p < 0.01	47	13	27,7	458° p < 0.01	460°	47	1	2,1	470°	460° p > 0.4
6	47	39	83,0	428±8,0° t = 2.5	458±7,9° p < 0.02	47	7	14,9	462° p < 0.01	464°	47	1	2,1	445°	435° p < 0.5

n - число глаз; « + » - расширение поля зрения; « 0 » - отсутствие динамики поля зрения; « - » - сужение поля зрения; t , p - коэффициенты достоверности.

As can be seen from the table, in all time intervals after the end of the BRT course in 70.2–83.7%, a significant expansion of the peripheral boundaries of the visual field was noted. The lack of influence on the state of the visual field was observed in 10.2–27.7%, and its deterioration only in 2.1–6.1% of cases, that is, in 1–3 eyes at each examination interval within 6 months.

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

Table 2 shows the results of the effect of BRT on the number of absolute cattle patients with primary glaucoma.

From table. 2 it follows that in more than half of the patients (in 55.9–61.7%) 1, 2, and 6 months after the end of the course of treatment, the number of absolute cattle decreased significantly (p <0.02–0.05). In 29.7–34.88% of cases, the state of the visual field did not change (the number of cattle changed by ± 1). In 8.5-10.2% of cases, the number of livestock increased, on average, by 1.8-2.3, which is unreliable (p > 0.6-0.8).

table 2

Influence of BRT on the number of absolute cattle in patients with primary glaucoma

Сроки наблюдения в мес.	«+» эффект					«0» эффект					«-» эффект				
	n		%	% абсолютных скотом		n		%	% абсолютных скотом		n		%	% абсолютных скотом	
	До лечения	После лечения		До лечения	После лечения	До лечения	После лечения		До лечения	После лечения	До лечения	После лечения		До лечения	После лечения
1	49	26	57,14	13,38±3,07	8,73±2,72 p < 0.02	49	18	32,65	2,88±1,5	3,18±1,48 t = 0,140 p > 0,9	49	5	10,2	9,92±3,71	11,42±3,2 p > 0.8
2	43	24	55,9	15,99±3,06	8,78±2,89 p < 0,05	43	15	34,88	2,74±1,82	2,86±1,8 t = 0,047	43	4	9,3	4,7±1,75	6,12±2,09 p > 0.8
3	43	24	55,9	13,49±2,06	8,78±1,5 p > 0,1	43	15	34,88	6,83±3,60	7,14±3,59 t = 0,	43	4	9,3	2,44±1,35	4,8±1,2 p > 0.7
6	47	29	61,7	14,92±1,0	9,32±2,61 p < 0,05	47	14	29,7	2,56±1,72	2,64±1,77 t = 0,030	47	4	8,5	2,63±1,52	4,53±1,39 p > 0,6

n - число глаз; « + » - расширение поля зрения; « 0 » - отсутствие динамики поля зрения; « - » - сужение поля зрения; t, p - коэффициенты достоверности.

10 patients were examined by color Doppler mapping of the vessels of the eye and orbit, and all showed an improvement in blood flow in the system of the posterior short ciliary arteries.

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

The IOP level in each of the study intervals remained the same or did not exceed fluctuations within ± 2 mm Hg. On average for the group (47 eyes), there was a tendency to decrease in ophthalmotonus from 19.87 ± 0.27 to 19.17 ± 0.25 (p> 0.1).

It is necessary to emphasize the absence of local unpleasant sensations and general side effects during the entire course of treatment and during the period of 6 months of observation of patients.

Summarizing, it can be noted that BRT in more than half of patients causes a neuroprotective effect, which consists of:

- in a reliable expansion of the peripheral boundaries of the visual field in 70-83% of cases in various periods after the end of the course of treatment;

- in a significant decrease in the number of absolute cattle in more than half of the patients (in 55.9–61.7% of cases).

BRT causes a tendency to a decrease in IOP immediately after the procedure and during the entire follow-up period after the course of treatment in most patients.

BRT improves blood flow in the posterior short ciliary arteries and does not adversely affect the state of the organ of vision (anterior segment, optical media, fundus).

CONCLUSIONS

Thus, physiotherapy and traditional medicine can be successfully used for the rehabilitation of patients with GON. The complex use of the above-mentioned techniques makes it possible to achieve stabilization of the process in 85% of cases, even in patients with advanced stage of glaucoma. At the initial and advanced stages of the glaucomatous process, when the reserve capabilities of the visual analyzer have not yet been exhausted, in more than 70% of patients it is possible to improve the central visual acuity, retinal photosensitivity according to computer perimetry data, and visual performance during ergonomic tests. In addition, they not only contribute to the stabilization and enhancement of visual functions, but also to improve the general well-being of patients.

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