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A new approach to the treatment of optic nerve atrophy as an inflammatory disease

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The aim of the study was to conduct an antibacterial treatment of optic nerve atrophy against the microflora of the conjunctiva of the eye (microbiota) in small doses. The treatment was performed in 65 patients with optic nerve atrophy. The age of patients ranged from 12 to 75 years. The patients underwent general ophthalmological studies before and after the treatment. A special place was occupied by the perimetry before and after the treatment. Before the treatment, a bacteriological analysis of the conjunctiva of the eye was determined in patients to establish a nature of the microbial population (microbiota). Then, considering this population (microbiota) a specific drug was selected. The drug was taken in such a minimum concentration in order not to "kill" the existing microflora but only to weaken it. When this dose was exceeded no improvement in visual indices has been observed. This drug was administered subcutaneously. The effectiveness of the therapy was determined 8 and 30 days and 3 months after the end of the treatment; then every 3 months. Thus, in 100% of cases, there was an improvement in the visual field and visual acuity in all patients. Today there is no treatment for optic neuropathy worldwide. The antibacterial treatment of optic nerve atrophy implemented by us gives an effect in almost all cases. This treatment is based on creating a balance between the microbiota of the conjunctiva of the eyes and the antibodies surrounding them. The use of this method can significantly reduce the number of blind people in the world from optic nerve atrophy.

Keywords: *treatment of optic nerve atrophy, optic nerve atrophy, optic neuropathy*

INTRODUCTION

Optic nerve atrophy is a polyetiological disease leading to low vision, blindness, and disability. A common cause of optic nerve atrophy is traumatic neuropathy. The main treatment is the administration of corticosteroids. If vision does not appear within 48 hours with corticosteroid treatment, then this is a poor prognostic sign. Also, a risk factor for vision loss is the presence of blood in the posterior ethmoid cells and loss of consciousness (Carta et al., 2003).

Indirect traumatic optic neuropathy refers to damage to the optic nerve resulting from blows or concussions to the head. The mechanism of damage is not clear. There are no protocols to prevent, mitigate and treat this disease. Injuries occur in sports, or on vehicles, from the ballistic impact caused by an explosion in war (Eric et al., 2016).

Some authors describe chronic relapsing steroid-responsive inflammatory optic neuropathy. This form of neuropathy is characterized by a strong decrease in vision and the presence of pain in the head during exacerbations of the (Saini and Khurana, 2010) process.

With optic neuropathies, a violation of colour vision occurs, boundaries of the visual field narrow, visual acuity decreased.

The use of digital imaging of the optic nerve and optical coherence tomography has revolutionized the diagnosis of (Biousse and

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Newman, 2016) optic neuropathies.

A minor effect in the treatment of chronic optic nerve atrophy occurs with the use of corticosteroids (Yu-Wai-Man and Griffiths, 2011). Literature data of the last 15 years show that the effectiveness of corticosteroids in the treatment of optic neuropathy is low (Levin et al., 1999). It is therefore clinically reasonable to decide to treat or not, on an individual patient basis (Stunkel and Van Stavern, 2018).

No clear benefit was found for either corticosteroid therapy or optic canal decompression surgery. The number of patients studied was sufficient to rule out major effects in the treatment groups, although clinically relevant effects in specific subgroups could have been missed.

These results and the existing literature provide sufficient evidence to conclude that neither corticosteroids, nor optic canal surgery should be considered a standard of care for patients with traumatic optic neuropathy (Wu et al., 2008). Therefore, there is no real cure or treatment for optic nerve atrophy (optic neuropathy).

The studies conducted by me earlier (Hajiev, 2014) showed that any inflammatory process is based on an imbalance between the microbial population and the antibodies surrounding them.

The purpose of the study was to conduct a specific antibacterial treatment of optic nerve atrophy in small doses taking into account the identified microflora of the conjunctiva of the eye.

MATERIALS AND METHODS

The examined group included 75 patients with optic nerve atrophy. 19 of them had an optic nerve atrophy associated with traumatic brain injury; 2 patients were with a background of multiple sclerosis; 9 patients were after neurosurgical operations; and the etiology of the remaining 45 was unknown. Hereditary atrophy of the optic nerve, secondary atrophy associated with edema of the optic nerve were not included in our examination. Age ranged from 12 to 75 years. 38 of them were women, 37 were men. Most of them have been unsuccessfully treated elsewhere.

Patients underwent determination of perimetry, biomicroscopy, tonometry, ophthalmoscopy. As the main indicator of the treatment effectiveness, we used visometry and perimetry. Perimetry was carried out on the automated perimeter ‘Medmont M700’ company ‘Medmont Pty Ltd’ (Australia).

Before the treatment, a bacteriological analysis of the conjunctiva of the eye was performed in patients to establish the nature of the microbial population. Then, considering this population (microbiota), a specific drug was selected. This drug was taken in such a minimum concentration in order not to “kill” the existing microflora but only to weaken it. When the indicated dose was exceeded, no improvement in visual parameters was observed. The drug was administered subcutaneously. The effectiveness of the therapy was determined 8 and 30 days after the end of treatment; then every 3 months.

The treatment was carried out with antibacterial agents taking into account the sensitivity of the microflora of conjunctiva of the eyeball. Antibacterial injections were injected subcutaneously into the arm. At the same time, patients were advised to exclude alcoholic beverages, products containing vinegar, ketchup, pickles and fermented milk products from the diet.

We noticed that if patients simultaneously consumed microbial fermentation products at the same time as treatment, then there was no improvement.

RESULTS AND DISCUSSION

Patients were re-examined after treatment on the 8th day, a month later, and 3 months later. It should be noted that improvement occurred already on the 8th day of treatment. This was manifested in a significant expansion of the field of view.

Moreover, 10 patients noticed an improvement in vision, which was expressed in an improvement in visual acuity, improved orientation and an increase in the amount of light. In the rest, visual acuity increased significantly after a month and after 3 months.

A month after the treatment, subjective

improvement in vision was noted by almost all patients. When analyzing computer static perimetry parameters in patients before and after treatment of optic nerve atrophy, a significant positive trend was revealed in the form of a decrease in sensitivity depression in terms of area and intensity.

Moreover, these dynamics improved from the end of the treatment to 3 months or more. Thus, in 100% of cases, there was an improvement in visual field and visual acuity in all patients.

It should be noted that in 3 patients after two years there was a deterioration in vision. In two patients, this was due to covid infection. One patient after cataract extraction surgery. Antibiotics are used after cataract extraction. It is the use of antibiotics after treatment of optic nerve atrophy that can lead to relapse. Repeated treatment resulted in improved vision.

Example 1. Patient A.E., 24 years old. Complaints about the lack of vision in the right eye and constantly deteriorating left eye. Visual acuity of the right eye is 0 (zero), left - 0.3 is not correct.

In 1997, a tumor was found in Moscow that filled the sphenoid sinus, cells of the ethmoid bone affecting the platform of the sphenoid bone, the Sella turcica, the upper and middle third of the clivus (tumor of the base of the skull).

In the same year, a successful operation was performed to remove this tumor. The postoperative period proceeded without complications.

Then radiation therapy was performed and the disease completely disappeared. But afterwards, the vision of the left eye gradually began to deteriorate. The patient was repeatedly treated in Moscow and in other clinics of the country (The Russian Federation is meant).

But the vision continued to deteriorate. A bacteriological analysis was taken from the patient's eye and injections were made in accordance with the sensitivity to an antibacterial drug. Already on the 4th day, the patient noticed an improvement in visual acuity. The improvement continued for the next 3 days. The field of vision expanded dramatically.

Example 2. Patient M.A., 16 years old, noticed a deterioration of his/her vision about a year ago. The vision gradually worsened. The vision of both eyes is 0.2. The boundaries of the view field are sharply narrowed.

After the treatment the visual acuity of the right eye in a month became 0.4, the left 0.5 is not correct.

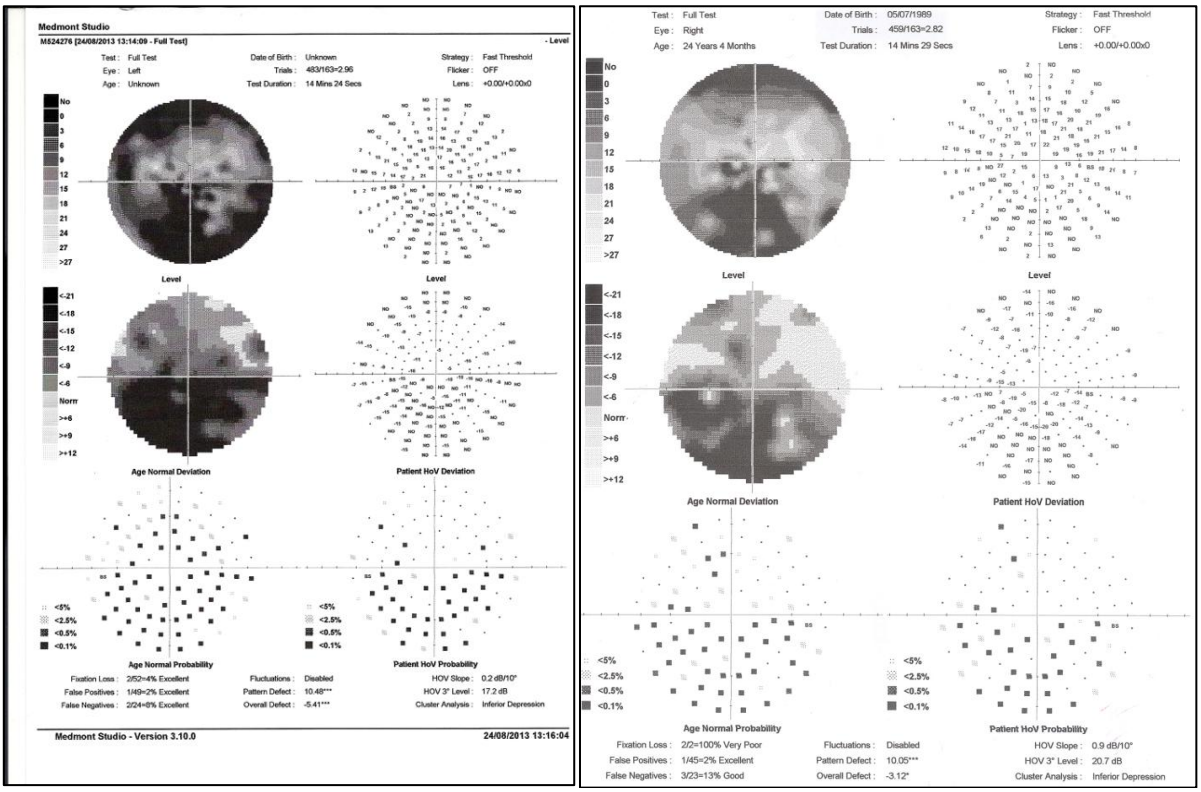

Fig. 1. Perimetry of the left eye of the patient A. E. before and 2 weeks after treatment.

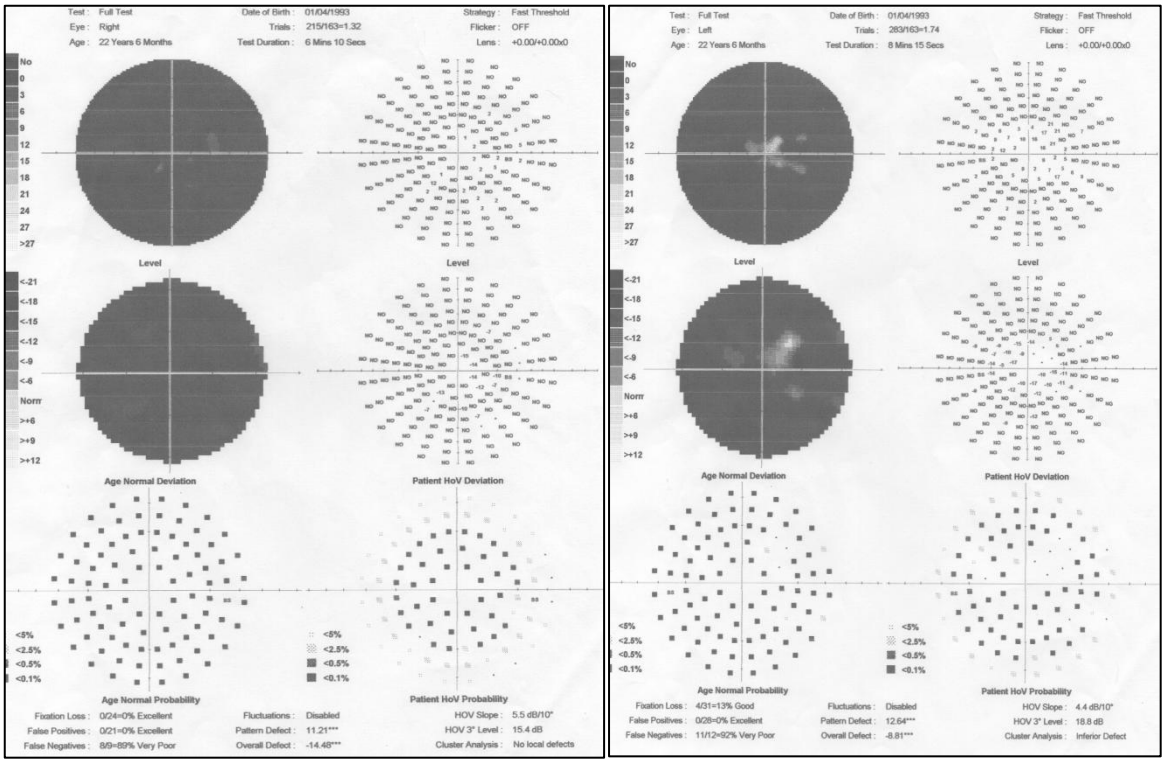

Fig. 2. Perimetry of the right eye of the patient M.A. before treatment and one month after treatment.

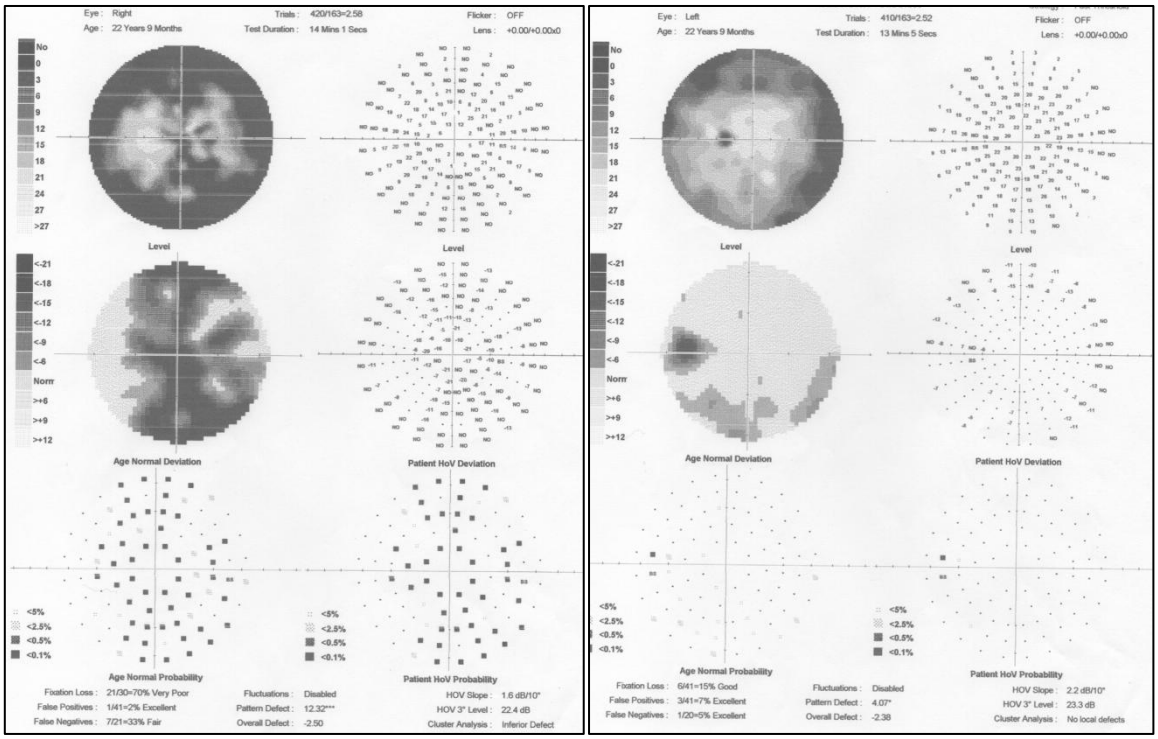

Fig. 3. Field of vision of the left eye of the patient Z.A. before and after 3 months of treatment.

Example 3. Patient Z.A., aged 16, contacted us in 2012. A diagnosis of optic nerve atrophy was made but they refused treatment. treated elsewhere. After repeated appeals to us, the visual acuity of the right eye was almost not determined as 0.01, the left eye was 0.1 (not correct). The field of vision is significantly narrowed.

Antibacterial treatment was carried out according to the method described by us. The vision began to improve already on the 4th day after the start of treatment. A re-examination was carried out after 8 days, a month, and 3 months.

After 3 months visual acuity of the right eye was 0.1, the left eye was 0.6. Fields of view were greatly expanded.

Thus, antibacterial treatment is aimed at weakening the microbial population of the conjunctiva of the eye. Similar studies were carried out by us earlier in the treatment of chronic prostatitis using the hemagglutination reaction (Haciyev 2004, 2014). These studies show that improvement in the condition of patients with chronic prostatitis when using antibacterial drugs was accompanied by an increase in the titer between the patient's serum and antigen (isolated from urine). Apparently, similar changes occur during the treatment of atrophy (neuritis) of the optic nerve.

CONCLUSION

Antibacterial-specific treatment of optic nerve atrophy directed against the microbiota of conjunctiva of the eye stops the progression of the disease and significantly improves visual functions.

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