



Effect of Complex Treatment of Patients with Autoimmune Uveitis on the Content of Cytokines in Tear Fluid

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Abstract: The purpose of this study is to study the effect of complex treatment using platelet autoplasm on the content of cytokines in the lacrimal fluid in patients with autoimmune uveitis.

Materials and methods. 40 people with non-infectious uveitis were examined: 18 men, 22 women. The patients were divided into two groups: the main group (anti-inflammatory treatment and administration of platelet autoplasm); comparison (anti-inflammatory treatment). Patients underwent a standard ophthalmological examination. IL-4, IL-6 was determined in the lacrimal fluid before and after treatment.

Conclusion. The use of platelet autoplasm in the treatment of patients is pathogenetically justified, since it leads to a more pronounced decrease in the activity of the immunoinflammatory process, which is confirmed by the dynamics of changes in the concentrations of the studied cytokines.

Keywords: autoimmune uveitis, cytokines.

Uveitis is a large and polymorphic group of inflammatory diseases of the vascular tract of the eye. Despite the considerable progress achieved in modern ophthalmology, the issue of timely diagnosis and treatment of diseases of the vascular membrane of the eye does not lose its relevance. The significance of this problem is determined by the high rate of decrease in visual acuity, the rapid development of complications and early disability. This pathology often develops in young able-bodied population [5, 6, 8].

In the structure of all uveitis, autoimmune uveitis accounts for up to 50% and is characterized by the most complex and severe course. The debut of many autoimmune processes begins precisely with the onset of uveitis. For example, the incidence of uveitis in ankylosing spondylitis (AS) is 20–40%, reactive arthritis is 12–37%, and inflammatory bowel disease is 2–9% [7, 10].

Endogenous uveitis of various etiologies is the most common pathology among inflammatory eye diseases. They occur in 15–38 people per 100,000 of the population and are a common cause (about 25%) of low vision and blindness, leading to significant economic losses [3, 4].

Treatment of this pathology, as a rule, takes quite a long time and is often ineffective. Therefore, increasing the effectiveness of ongoing therapy is an urgent task of public health.

The chronic relapsing course of non-infectious uveitis causes difficulties in treatment, so the search for new methods of therapy continues. In recent years, the use of platelet autoplasm to activate reparative processes has been actively studied [1].

The purpose of this study is to study the effect of complex treatment with the use of platelet autoplasm on the content of cytokines in the lacrimal fluid in patients with non-infectious uveitis.

Material and methods. The study included 40 people (72 eyes) from 21 to 56 years old with non-infectious uveitis, at different stages of the disease and in varying degrees of severity: 18 men, 22

women. In all patients, uveitis was observed against the background of a systemic disease. Cardiovascular diseases in patients accounted for the majority of systemic diseases. All patients received basic therapy.

Criteria for inclusion of patients in the study: the presence of non-infectious uveitis; personally signed voluntary informed consent. Before the study, all patients underwent general clinical research methods (general detailed blood test, blood sugar test, biochemical blood test, urinalysis, ECG); patients were consulted by an ENT doctor, rheumatologist, gastroenterologist, general practitioner.

An ophthalmologist's examination was carried out both with the independent treatment of patients, and in the direction of a cardio rheumatologist. All patients were prescribed a standard ophthalmological examination: visometry, bio microscopy, examination of the fundus with the maximum possible mydriasis.

The patients were divided into two groups according to the type of treatment: the main group consisted of patients who received the introduction of platelet autoplasm against the background of anti-inflammatory treatment; the comparison group included patients who received only anti-inflammatory treatment.

In the Bukhara branch clinic of the Republican Specialized Scientific and Practical Medical Center for Eye Microsurgery, according to the type of treatment, 40 patients (from 21 to 56 years old with non-infectious uveitis, at different stages of the disease and in varying degrees of severity) were divided into 2 groups. The first (main) group consisted of patients who received the introduction of platelet autoplasm against the background of anti-inflammatory treatment; the second - the comparison group included patients who received only anti-inflammatory treatment.

Patients of the main group and the comparison group underwent anti-inflammatory treatment: dexamethasone 4 mg/0.6 1 time per day parabulbar in the area of the affected eye No. 5; dexamethasone 4-8 mg once a day No. 5; furosemide 2.0 intramuscularly 1 time per day No. 5; electrophoresis with prednisolone in the area of the affected eye No. 5.

Patients of the main group underwent the introduction of platelet autoplasm (plasmolifting) into the region of the side of the affected eye 2.0 ml in the amount of 3 injections with an interval of 72 hours.

In order to assess the activity of the local inflammatory process in the eyes of patients and its level, the composition of cytokines was studied in all patients before the start of treatment and on the 10th day of therapy (at the end of treatment).

The lacrimal fluid was chosen for the study as the most convenient and atraumatic for taking the patient's biological substrate. All patients were injected with a local anesthetic in the eye. Tears were carefully collected from the lower conjunctival space of the eye using a dry sealed microcannula. In order to increase tear production in patients, mechanical stimulation of the receptor endings of the trigeminal nerve innervating the mucous membrane of the eye was performed.

IL-4, IL-6 was chosen as the studied cytokines. The study was performed on test systems according to the manufacturer's instructions. The results of enzyme immunoassay were recorded on a vertical photometer Uniplan AIFR-01 analyzer of enzyme immunoassay; the results were expressed in pg/ml.

Results and discussion. In the lacrimal fluid of patients with non-infectious uveitis, a significant increase in the concentration of cytokines with anti-inflammatory activity and capable of triggering a cascade of reactions leading to the development of inflammatory-destructive and autoimmune processes was found.

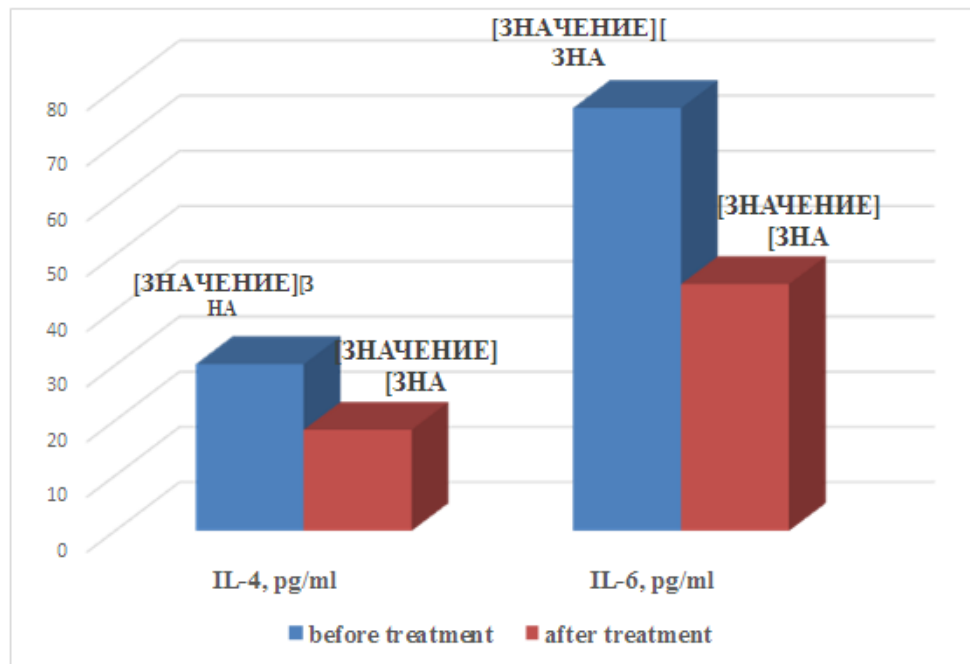
The results obtained during the study are presented in the following diagrams (diagram No. 1 and diagram No. 2).

When analyzing the content of IL-6 in the lacrimal fluid of patients of the examined groups, which is a pro-inflammatory pluripotent cytokine involved in the processes of chronic inflammation, autoimmune response and antibody production and playing a significant role in the mechanisms of development of autoimmune uveitis, the following data were obtained. The content of IL-6 in the

lacrimal fluid of patients with non-infectious uveitis was statistically significant ($p < 0.01$), more than 8.2 times higher than in the norm.

Against the background of the treatment in patients of the comparison group, there was no decrease in the concentration of IL-6. In the main group of patients, a statistically significant ($p < 0.01$), 1.7 times, decrease in IL-6 concentrations was recorded relative to the data obtained before treatment, as well as after treatment in the comparison group.

Diagram 1. The composition of the studied cytokines in the lacrimal fluid of patients of the main group

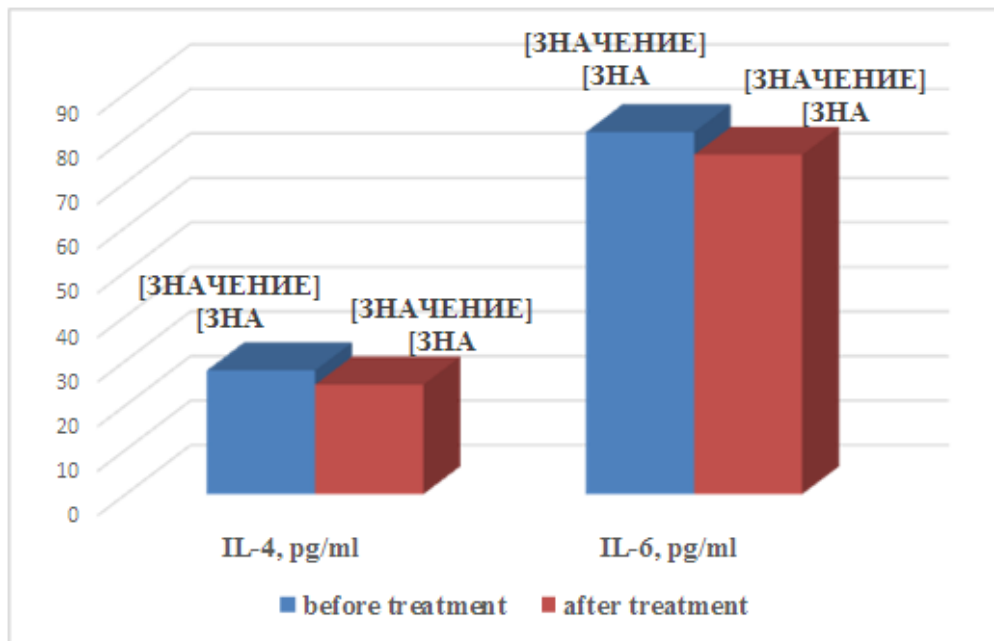


* — significance of differences with indicators in basic group, $p < 0.01$;

When analyzing the content of IL-4 in the lacrimal fluid of patients of the examined groups, which is capable of activating the development of an immune response along the T-helper-2 pathway, which is an inducer of antibody genesis and is involved in the development of autoimmune inflammation, the following data were obtained.

The content of IL-4 in the lacrimal fluid of patients with non-infectious uveitis is statistically significant ($p < 0.01$), more than 2.5 times higher than normal. Against the background of the treatment, patients of the comparison group had a statistically insignificant decrease in the concentration of IL-4. A statistically significant ($p < 0.01$), 1.5 times, relative to the data obtained before treatment, and 1.4 times relative to the data obtained after treatment in the comparison group, a decrease in IL-4 concentrations was recorded in the main group of patients.

When analyzing the data obtained in both examined groups, an increase in visual acuity and a decrease in uveitis activity were found, which was more pronounced in patients of the main group.

Diagram 2. The composition of the studied cytokines in the lacrimal fluid of patients in the comparison group

* — significance of differences with indicators in comparison groups, $p < 0.01$;

Conclusion. Based on the data obtained from the results of the above study, it was found that an important role in the pathogenesis of the disease is played by the development of a local inflammatory process, which is manifested by a statistically significant increase in the concentration of anti-inflammatory cytokines in patients with non-infectious uveitis. The detection of IL-4 and IL-6 in the lacrimal fluid indicates the involvement of cytokines in the autoimmune response and chronic inflammatory processes. In the treatment of patients with autoimmune uveitis, the use of platelet autoplasm against the background of complex treatment is pathogenetically reliable, which is confirmed by the fact that the results obtained during the study led to a significant decrease in the activity of the immune-inflammatory process compared to the comparison group.

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