APPLICATION OF EXTRACORPOREAL TREATMENT METHODS IN THE COMPLEX THERAPY OF PATIENTS WITH CHRONIC UVEITIS

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Relevance of the problem

Uveitis represents a heterogeneous group of inflammatory diseases affecting the uveal tract and adjacent ocular structures (retina, optic nerve, vitreous body, sclera). Uveitis can be of both infectious and non-infectious origin, and although clinical manifestations may appear similar, it is essential to differentiate clinical forms due to differences in their pathophysiology and treatment strategies. Uveitis occurs when the delicate balance of the immune system is disrupted by endogenous or exogenous factors. This leads to an increase in pro-inflammatory cytokines (IL-1, IL-6, IL-12, TNF-alpha, interferons, chemokines, IL-8, and others). The action of these inflammatory mediators results in structural and functional disorganization of connective tissue and impaired microcirculation, causing hypoxia, ischemia, and various other changes in ocular tissues that contribute to disease progression.

Immune disorders play a crucial role in the etiopathogenesis of uveitis. Therefore, in addition to standard therapy aimed at eliminating the pathogen, controlling inflammation, preventing synechiae formation, detoxification, and desensitization, immune correction should also be an essential part of uveitis treatment. Therapy should be pathogenetically targeted and localized to the affected tissue to maximize the efficacy-to-side-effect ratio. However, this is not always achievable, which is why the search for new methods capable of suppressing inflammatory activity and preventing immune-mediated tissue damage and vision loss with minimal side effects continues.

Objective of the study. To explore the feasibility and assess the effectiveness of various extracorporeal treatment methods in patients with chronic uveitis.

Materials and methods. The study involved 104 patients with chronic uveitis (46 men and 58 women), aged 18 to 67 years. Disease duration ranged from 1 to 3 years. Based on treatment methods, the patients were divided into two groups:

Group I received only standard (baseline) therapy: 55 patients (62 eyes)

Group II received standard therapy plus plasmapheresis: 49 patients (64 eyes)

Standard therapy consisted of broad-spectrum antibiotics, local and systemic corticosteroids (including pulse therapy), local and systemic nonsteroidal anti-inflammatory drugs, and mydriatics. Antiviral medications were prescribed when indicated.

Plasmapheresis was performed using the discrete centrifugal method with Hemacon-type plastic containers and a citrate anticoagulant. After plasma separation, the cell mass was resuspended in 0.9% sodium chloride solution (1:1 ratio) and returned intravenously by bolus injection. Plasma volume replacement was done using 100–120% of isotonic saline. General heparinization was administered at 150 IU per kg of body weight. A total of 100–150% of the circulating plasma volume was removed over 2–3 sessions at 3–5 day intervals. No premedication was given.

Treatment effectiveness was evaluated by changes in humoral immunity markers (levels of immunoglobulins A, G, M, E) and cytokines (IL-1β and IL-10) in the blood. These assessments were performed on the day of hospitalization (before treatment) and 10 days after treatment. Ophthalmological parameters were also assessed before and after treatment (visual acuity, pneumotonometry, biomicroscopy, echobiometry, perimetry, ophthalmoscopy).

Results

The results show that even after a single plasmapheresis session, ophthalmological examination revealed reduced ciliary injection, corneal edema, and the number of precipitates within the first few days. There was also an objective improvement in visual acuity and general condition. By days 3–5, precipitates on the corneal endothelium had disappeared, the number of inflammatory cells in the vitreous body had significantly decreased, and visual acuity increased by 0.5 ± 0.12.

In the group receiving only baseline therapy, ciliary tenderness subsided within 2–3 days in only 62.5% of cases, compared to 73.4% in Group II. Inflammatory exudate in the anterior chamber and precipitates on the corneal endothelium resolved 4.5 days earlier in Group II than in Group I ($p<0.01$).

Serum IgM levels remained essentially unchanged in both groups, and the baseline values were close to normal. Both groups showed a significant reduction in IgG levels at baseline ($p<0.05$). Patients with elevated baseline IgA levels also demonstrated a significant decrease after treatment ($p<0.05$).

Cytokine analysis before and after treatment showed statistically significant changes in IL-1β and IL-10 levels in the blood plasma of Group II patients by day 10 ($p<0.05$).

Conclusion

The use of plasmapheresis in combination with standard pharmacological therapy in the complex treatment of patients with uveitis accelerates the regression of clinical symptoms and helps prevent severe ocular complications associated with the disease. The result of such combined therapy is an additional immunomodulatory effect, which is beneficial in the treatment of chronic uveitis.