CLINICAL EFFICACY OF EXTRACORPOREAL AND INTRAVASCULAR HEMOCORRECTION METHODS IN PSORIASIS

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ABSTRACT

study of the influence of methods of extracorporeal and intravascular hemocorrection (plasmapheresis, ultraviolet blood irradiation, ozone therapy and their combination) on the course of the skin process and the quality of life of patients with widespread psoriasis vulgaris. Material. 253 patients with widespread psoriasis aged 18 to 72 years were examined. Treatment was assessed using the PASI (Psoriasis Area and Severity Index) and dermatological quality of life index (DQLI). Results. The inclusion of efferent-quantum methods and ozone therapy in the complex of psoriasis treatment contributes to a faster and more pronounced positive dynamics of the skin process, improving the quality of life. The most effective was the use of plasmapheresis and its variants with photomodification or ozone treatment of the returned erythrocyte suspension. Plasmapheresis and its modifications should be used in the complex treatment of patients with severe psoriasis. Conclusion. It seems promising to further study the methods of efferent-quantum medicine and ozone therapy and their wider use in the treatment of psoriasis and other chronic dermatosis.

KEYWORDS: *Psoriasis, Plasmapheresis, Ultraviolet Blood Irradiation, Ozone Therapy, Quality Of Life.*

INTRODUCTION

Psoriasis is an autoimmune, genetically determined chronic dermatosis of a multifactorial nature, characterized by hyperproliferation of epidermal cells, impaired keratinization, inflammation in the dermis, and pathological changes in the musculoskeletal system, internal organs, and nervous system **[1].** The disease rarely poses a threat to life, but it always causes a significant decrease in its quality, negatively affecting social adaptation, job choice and career growth **[2].** Psoriasis is characterized by a worse quality of life in comparison with such severe and life-threatening diseases as diabetes mellitus and oncopathology **[3].**

Due to the complexity and insufficient knowledge of the mechanisms of the etiopathogenesis of psoriasis, there is still no single effective treatment regimen for this disease. The methods of disease therapy available in the arsenal of modern dermatology are not always effective. The use of photochemotherapy, cytostatics, corticosteroids, high doses of vitamin A leads to dysfunction of the liver, bone marrow, intestines, and immune system **[4].** The procedures of efferent-quantum medicine and ozone therapy are devoid of a number of disadvantages of drug therapy. Influencing the blood, they have a wide range of biological effects, are well tolerated, have a low incidence of side effects, and are economically available **[5–7].**

Purpose: to study the effect of methods of extracorporeal and intravascular hemocorrection (plasmapheresis, ultraviolet blood irradiation, ozone therapy and their combination) on the dynamics of the skin process and the quality of life of patients with widespread psoriasis vulgaris.

Methods

An open prospective study was conducted, the protocol of which was approved by the local ethical committee. We examined 253 patients with a progressive stage of generalized psoriasis vulgaris aged 18 to 72 years (mean age 37.2 years). Among the examined men there were 202 (79.8%), women — 51 (20.2%). All patients were hospitalized at the Mordovian Republican Dermatovenerological Dispensary (Saransk) from 2007 to 2010. Criteria for inclusion of a patient in the study: progressive stage of widespread psoriasis vulgaris; voluntary written consent to participate in the study. Criteria for exclusion of a patient from the study: previous therapy with cytostatics and systemic corticosteroids; the presence of decompensated somatic pathology; tumor diseases; infectious and inflammatory diseases transferred in the last month. The age of onset of psoriasis in the examined patients ranged from 5 to 71.5 years (average 26.6 years). The duration of the disease varied from 2 months to 47 years, averaging 10.6 years. Heredity was burdened in 85 patients (33.6%).

The severity and prevalence index of psoriasis PASI in the studied patients ranged from 7.0 to 40.0 points (the average value of the index was 15.0 points). In 50 patients with more severe psoriasis, the PASI index was more than 20.0 points before the start of therapy. Rashes in these patients were widespread, marked brightness, infiltration of elements, profuse desquamation. Tendency to erythroderma was noted in 6 patients. Concomitant damage to the joints was noted in 80 patients (31.6%), damage to the nail plates was present in 113 patients (44.7%). Of the comorbidities, chronic diseases of the cardiovascular system, organs of the gastrointestinal tract, musculoskeletal system, chronic pathology of the upper respiratory tract, chronic bronchitis, acute respiratory viral infections prevailed. By randomization, patients were divided into a

number of groups comparable in terms of sex, age, duration of the disease, severity of the skin process, and the nature of comorbidities. Group I patients received ultraviolet blood irradiation procedures against the background of standard therapy. Depending on the method of photohemocorrection and radiation characteristics, two subgroups were distinguished: Ia (n=35): standard therapy + 5 sessions of autotransfusion with ultraviolet irradiated blood (AUFOK) using the Yulia apparatus (Russia, Voronezh). We used the operating mode of the apparatus with the LK-6 emitter (633 nm). The blood was taken from the patient's vein at the rate of 2 ml per 1 kg of the patient's body weight into containers of the "Gemasin-500/400" type with a preservative of the "glugicir" type. Irradiation was carried out during reinfusion of autologous blood at a rate of 20–40 ml/min using a special disposable cuvette. Ib (n=38): standard therapy + 5–10 sessions (average 6.5) of intravascular photomodification of blood (IVBM) using the apparatus OVK-3 (Russia, St. Petersburg) and quartz fiber light guides. We used the II mode of the apparatus (wavelength 360–590 nm). The light guide was passed through a hole in the rubber part of the system for dripping solutions. Its end was at the level of the needle cut and was constantly washed with saline, which was administered drip (40–60 drops per minute) throughout the entire procedure (20 minutes). In group II (n=42), patients received 5–10 (average 7.5) intravenous drip infusions of ozonized saline (OSS) in the complex of therapy. The OFR was prepared on a Medozons BM medical ozone generator (Arzamas) by bubbling an ozone–oxygen mixture through an isotonic sodium chloride solution for 10 min. Infusion volume 200 ml, ozone concentration 2.5 mg/l. Sessions of photohemocorrection and ozone therapy were carried out daily.

Group III patients received efferent therapy procedures against the background of standard therapy: IIIa (n=32): 3–5 sessions (3.4 on average) of discrete plasmapheresis (DPA). In one session, 1200–1600 ml of blood was exfused (at the rate of 20 ml per 1 kg of the patient's body weight). Satisfactory general condition of patients with psoriasis made it possible to compensate for the loss of plasma with saline, which eliminates the possibility of contracting viral infections and significantly reduces the cost of the procedure. IIIb (n=30): 3-5 sessions (average 3.9) of plasmapheresis with autotransfusion of photomodified erythrocyte suspension (PA-APE) [7]. Principle of the method: with discrete plasmapheresis, one of the portions of autoerythrocytes (2.5–3.5 ml per 1 kg of the patient's body weight) was subjected to photomodification using the Yulia apparatus (LK-6 emitter) before returning to the patient. IIIc (n=34): 3-5 sessions (average 3.6) of plasmapheresis with autotransfusion of modified erythrocyte suspension with ozone (PA-AMME) according to our method (patent No. 2394563, registered in the State Register of Inventions of the Russian Federation on July 20, 2010) .). The principle of the method is that with discrete plasmapheresis, one of the portions of autoerythrocytes (2.5–3.5 ml/kg of the patient's body weight) before returning to the patient was diluted not with saline, but with 200 ml of ozonized saline (OSS) with an ozone concentration of 2.5 mg/ l. Plasmapheresis sessions were performed every other day. In group IV (n=42), patients received standard therapy (ST) for psoriasis (desensitizing, antihistamines, sedatives, hepatoprotectors, vitamin therapy, local exfoliating and resolving therapy, general suberythemal ultraviolet skin irradiation). To assess the clinical dynamics, the PASI (Psoriasis Area and Severity Index) index of coverage and severity of psoriasis was used **[8].** To calculate the index, the area of the affected body surface and the intensity of the main symptoms of psoriasis were determined. The severity of skin manifestations was assessed by three indicators: erythema (redness), infiltration and peeling, and

was expressed according to a point system (from 0 to 96). Along with the PASI index, the dermatological quality of life index (QLI) [9], Russified by prof. N. G. Kochergin (2001). The DIQL evaluates the negative impact of a dermatological disease on a patient's quality of life and consists of 10 questions characterizing various aspects of a patient's life: professional, domestic, sexual, and social. For each question, the patient must give one answer out of four proposed, reflecting the degree of influence (very strong, strong, not strong, no impact). Each answer has its own index; the sum of 10 indices is the DIQOL of a particular patient for a given period of time, which is in the range from 0 to 30. At the same time, the patient's quality of life is inversely proportional to the sum of points. We used DIC to assess the severity of the patient's condition and as a criterion for the effectiveness of the therapy.

Determining the timing of the onset of resolution of skin efflorescences, under clinical recovery and significant improvement, we understood a decrease in PASI by 75–100% from the original; under moderate improvement, 50–74% reduction in PASI; under insignificant improvement — decrease in PASI during therapy by 25-49%. Statistical processing of the results was carried out using the Microsoft Excel program. Descriptive statistics methods were used with the calculation of the arithmetic mean (M), the arithmetic mean error (m). The degree of significance of the difference in indicators was determined by Student's t-test. Correlation analysis was performed using the Spearman test (r). Results were considered significant at p0.05.

DISCUSSION

The inclusion of methods of extracorporeal and intravascular hemocorrection improves the effectiveness of psoriasis treatment. This is expressed by a faster and more complete positive dynamics of the skin process, improved hospitalization outcomes, and a more pronounced improvement in the quality of life. The greatest efficiency was noted in patients who received sessions of efferent therapy. When discrete plasmapheresis was included in the complex of therapy for psoriasis, a decrease in the PASI index ≥75% from the baseline was in 68.8% of patients, when using plasmapheresis with ultraviolet irradiation of returning erythrocytes - in 76.7%, with a combination of plasmapheresis and ozone therapy in 79.4 % of patients. Similar results indicate that in terms of clinical efficacy, efferent methods for psoriasis approach cytostatics, aromatic retinoids, systemic corticosteroids, and PUVA therapy. Patients treated with plasmapheresis and its modifications also showed a more pronounced positive dynamics of DIQ. This may be due to a faster regression of psoriatic lesions and an improvement in the general condition of the observed patients. In a number of patients of group III, the DIQL index decreased to zero, which means that the patient is completely psychologically free from psoriasis. The effectiveness of efferent methods did not decrease with an increase in the initial severity of the skin process. The high efficiency of plasmapheresis and its modifications in female patients may be due to the better adaptive capabilities of the female body**. [8]**

The literature **[9]** notes the possibility of enhancing the detoxifying, immunocorrective, rheocorrective effect of plasmapheresis by means of ultraviolet irradiation and ozonation of the returned globular mass. There are reports of a positive effect of a combination of efferent and quantum methods of treatment on the course of the skin process in psoriasis **[10].** In our study, in patients who received plasmapheresis in combination with ultraviolet irradiation or ozonation of returned erythrocytes, a slightly more pronounced positive dynamics of PASI and DICF indices was noted than in patients who received plasmapheresis according to the traditional method.

However, this difference was not significant. Of the methods of photohemocorrection, the use of AUFOK was more effective for widespread psoriasis vulgaris. The different efficiency of blood photomodification methods can be explained by different irradiation parameters (the LK-6 emitter of the Yulia apparatus approaches the radiation of a helium-neon laser in terms of spectral characteristics), and different volumes of irradiated blood. It is also impossible to exclude the positive effect of the hemo-preservative used in AUFOK (glugicir). The clinical effectiveness of ozone therapy procedures for widespread psoriasis vulgaris approximately corresponds to the therapeutic effect of AUFOK sessions. The effectiveness of ozone therapy in psoriasis decreases with increasing age and initial severity of the skin process. **[11]**

CONCLUSION

Methods of efferent-quantum medicine and ozone therapy increase the effectiveness of complex therapy for widespread psoriasis vulgaris. They contribute to a faster and more complete positive dynamics of the skin process, a more pronounced improvement in the quality of life, and an improvement in the outcome of hospitalization. The greatest efficiency was noted when using plasmapheresis or its combination with photomodification or ozone treatment of returned erythrocytes. These methods should be used in the complex treatment of patients with severe psoriasis. **[12]**

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