

ASSESSMENT OF THE CLINICAL EFFICIENCY OF THE UTILIZATION OF PLATELET RICH PLASMA IN THE THERAPY OF VITILIGO

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✓ Resume,

Aim: to study the clinical efficiency and safety of platelet rich plasma (PRP) injection in the cure of limited vitiligo.

Patients and Methods: 48 patients with vitiligo aged from 19 to 59 years (35 women and 13 men) with the duration of the disease from 7 months to 12 years were examined. Patients were divided into 2 groups: group 1 (comparison group) - 25 vitiligo patients, treated with photodynamic therapy; group 2 (main group) - 23 patients, who received PRP injections as part of complex therapy. To compare laboratory studies, data from 28 healthy donors (control group) were used.

Results: the study showed a similar effectiveness of the use of phototherapy and PRP in the treatment of restricted forms of vitiligo in both methods. It was found that the use of PRP allows to obtain clinical remission (full, severe and moderate effect) in 87.5% of cases. Analysis of levels of proinflammatory cytokines showed that the use of this method in the treatment of vitiligo is pathogenetically justified, which was confirmed by a significant decrease in the concentrations of interleukins 1, 8, 10 and tumor necrosis factor α in patients with both groups of blood relative to baseline values. The assessment of the dynamics of vascular endothelial growth factor (VEGF) showed that the level of the indicator was significantly higher than the control level before the start of treatment, then after a treatment in both groups of vitiligo patients there was a significant decrease in the VEGF concentration as compared to the baseline level. It was found that the use of PRP resulted in a significant increase in the level of melanin in more 2 times in the foci of the disease, similar was the increase in this parameter in the group of patients who received phototherapy. The absence of undesirable phenomena in both groups of patients during the observation period was noted. It was found that the use of PRP in the treatment of vitiligo is safe, not accompanied by side effects, allergic and toxic reactions.

Conclusions: the method of utilization platelet rich plasma in the treatment of vitiligo is clinically effective and safe, as its use makes it possible to obtain clinical remission in 87.5% of patients.

Key words: vitiligo, depigmentation, melanin, platelet-rich plasma, immune system, photodynamic therapy, cytokines, vascular endothelial growth factor.

PRP TERAPIYANING VITILIGO KASALLIGIDA QO'LLASHNING KLINIK SAMARADORLIGINI BAHOLASH

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Maqsad: Vitiligoning chegaralangan shaklida klinik samarador va xavsiz PRP ineksiyasini o'rganish.

Bemorlar va usullar: 48ta vitiligo bilan xastalangan bemorlar 19yoshdan 59yoshgacha (35ta ayol va 13ta erkak) bo'lib kasallanish muddati 7oydan 12yilgacha. Bemorlar 2 guruxga ajratildi 1(qiyoslama gurux)-23ta bemor standart davo oldan, 2(asosiy gurux) PRP terapiya va kompleks davoni ham olgan. Nazorat guruxidagilar soni 28ta.

Natijalar: izlanish shuni ko'rsatdiki vitiligoning chegaralangan shaklida nur terapiya va PRP terapiyani qo'llash yaqin samaradorlikni ko'rsatdi ikki usulda ham. 87,5% holatda (to'liq, kuchli va o'rtacha) PRP terapiyaning qo'llanilishi klinik remissiyaga erishildi. Qon tahlilida yallig'lanish sitokinlarining darajasi, PRP terapiyaning vitiligo xastaligida patogenetik tasiri, ikkala gurux bemorlarida ham sezilarli interleykin 1,8,10 va to'qima nekroz faktori α ning konsentratsiyasi pasayganligi buning yaqqol isbotidir. Davodan so'ng ikkala gurux bemorlarida ham VEGFning darajasi davodan oldingi xolatga nisbatan pasayganligini kuzatishimiz mumkin. PRP terapiya bilan davolanayotgan bemorlar guruxida oq dog'lar soxasida melaninning 2barobar ko'proq ishlab chiqarilganligi kuzatilgan, shuningdek nur terapiya olayotganlarda ham. PRP terapiyani qo'llash bemorlar uchun xavsiz, nojo'ya tasirlarsiz va allergik, toksik reaksiyalar kuzatilmaydi.

Xulosa: vitiligo xastaligini davolashda PRP terapiyadan foydalanish klinik samarador va xavsiz, shuningdek 87,5% holatlarda klinik remissiyaga erishishimiz mumkin.

Tayanch so'zlar: vitiligo, depigmentatsiya, melanin, platelet-rich plasma, immun sistema, nur terapiya, sitokinlar, vascular endothelial growth factor.

ОЦЕНКА КЛИНИЧЕСКОЙ ЭФФЕКТИВНОСТИ ПРИМЕНЕНИЯ БОГАТОЙ ТРОМБОЦИТАМИ ПЛАЗМЫ В ЛЕЧЕНИИ ВИТИЛИГО

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✓ Резюме,

Цель исследования: изучить клиническую эффективность и безопасность инъекций богатой тромбоцитами плазмы (БТП) в лечении ограниченных форм витилиго.

Материал и методы: обследовано 48 больных витилиго в возрасте от 19 до 59 лет (35 женщин и 13 мужчин) с длительностью заболевания от 7 мес. до 12 лет. Пациенты были разделены на 2 группы: группа 1 (сравнения) - 25 больных витилиго, в лечении которых использовалась фотодинамическая терапия; группа

2 (основная) - 23 пациента, которым в рамках комплексной терапии выполнялись инъекции БТП. Для сравнения результатов лабораторных исследований использовали данные 40 здоровых доноров (контрольная группа).

Результаты исследования: показана сходная эффективность фототерапии и БТП в лечении ограниченных форм витилиго. Установлено, что применение БТП позволяет получить клиническую ремиссию (полный, выраженный и умеренный эффект) в 87,5% случаев. Анализ содержания провоспалительных цитокинов показал, что использование БТП в лечении витилиго является патогенетически обоснованным, что подтвердилось достоверным снижением концентраций интерлейкинов 1, 8, 10 и фактора некроза опухоли α в плазме крови пациентов обеих групп относительно исходных значений. После проведенного лечения в обеих группах больных витилиго наблюдалось достоверное снижение концентрации сосудистого эндотелиального фактора роста (VEGF) относительно исходного уровня. Использование БТП приводило к достоверному повышению содержания уровня меланина в 2 раза более в очагах заболевания, аналогично увеличивался этот показатель в группе пациентов, которым проводилась фототерапия. Нежелательные явления отсутствовали в обеих группах пациентов в течение периода наблюдения. Было установлено, что использование БТП в лечении витилиго безопасно, не сопровождается побочными действиями, аллергическими и токсическими реакциями.

Заключение: метод лечения витилиго с использованием БТП является клинически эффективным и безопасным, поскольку позволяет получить клиническую ремиссию у 87,5% пациентов, не вызывая побочных реакций.

Ключевые слова: витилиго, депигментация, меланин, богатая тромбоцитами плазма, иммунная система, фотодинамическая терапия, мексаметрия, цитокины, сосудистый эндотелиальный фактор роста.

The article presents the results of an original study on the clinical efficacy and safety of injections of platelet-rich plasma in the treatment of limited forms of vitiligo.

Introduction. Vitiligo is a disease manifested by a violation of pigmentation and the appearance of depigmented spots with a tendency to peripheral growth. The multifactorial concept of pathogenesis and those disorders that are detected during clinical and laboratory examination substantiate the need to use a wide range of measures in the treatment of vitiligo. The goal of treatment for vitiligo is to stop the progression of the disease and regress its clinical manifestations. Moreover, the outcome of the disease is largely determined by an adequate choice of treatment methods with an individual approach.

To date, a number of new methods of treating vitiligo have been proposed, as one of the most promising approaches is considered therapy with platelet-rich plasma (PRP). The materials of published studies indicate the high potential of this method, however, there are few reports of its use in the pathology under consideration, indications for the use of PRP in vitiligo have not been developed. Available literature does not contain an assessment of the clinical efficacy and safety of the method in comparison with other approaches to the treatment of vitiligo.

Purpose of the study: to study the clinical efficacy and safety of PRP injections in the treatment of limited forms of vitiligo.

Material and methods

The work was performed in the department of skin and venerological diseases of the Bukhara State Medical institute after named Abu Ali Ibn Sino and Bukhara regional dermatological and venerological centre. 48 patients with vitiligo aged 19 to 59 years (35 women and 13 men) with a disease duration of 6 months were examined. up to 22 years old. Patients were divided into 2 groups: group 1 (comparison) - 25 vitiligo patients, in the treatment of which standard approaches to the treatment of the disease were used;

group 2 (main) - 23 patients who underwent PRP injections as part of complex therapy. For comparison of laboratory studies used data from 28 healthy donors (control group).

A standard clinical examination of vitiligo patients included a history of the disease and life, patient complaints, assessment of dermatological status, examination using a Wood fluorescent lamp, and measurement of the area of depigmented lesions using a ruler.

The clinical effectiveness of the treatment methods used was evaluated by the stabilization of the process and by area in the form of diffuse or spot repigmentation, reduction in the area of depigmented spots or complete closure of foci.

All patients underwent an immunological study of the content of vascular endothelial growth factor, cytokines - interleukins (IL) 1, 6, 8, 10 and tumor necrosis factor α (TNF- α). The cytokine status of vitiligo patients, as well as the content of vascular endothelial growth factor (VEGF), was assessed by enzyme-linked immunosorbent assay using the appropriate monoclonal antibodies immobilized on the surface of the holes of the polystyrene plate from the sets of test systems.

Minimal drug exposure (microelements (cupir, pyrasin), vitamins, hepatoprotectors, vascular preparations) was used as background therapy in both groups of patients.

The treatment in group 1 (comparison) was carried out using narrow-band phototherapy with ultraviolet rays (UV) of spectrum B with a wavelength of 311 nm. The number of procedures per course is 16-48 (an average of 32). The maximum dose ranged from 0.5 to 2.4 J / cm²

(average 1.45 J / cm²), course dose - from 2.2 to 32 J / cm²

(average 14.7 J / cm²).

Patients of group 2 (main) in the treatment complex used PRP. The procedure included blood sampling, obtaining autoplasm (PRP), the introduction of autoplasm to the patient. Blood sampling was carried out standardly, using a peripheral venous

catheter or a large-diameter needle, so as not to damage the formed elements of the blood. The blood volume was usually

35-50 ml and did not depend on the intended area of administration. After sampling, the blood was placed in standard sterile tubes containing an anticoagulant, and plasma was obtained by fractionation by centrifugation. Next, the main stage was carried out - intradermal injections of the obtained plasma concentrate using the classic micropapule mesotherapy technique. 5 procedures were performed for each patient with an interval of 10-14 days.

Statistical processing of the obtained data was performed using the Statistica software package for Windows 10.0 using the methods of parametric and nonparametric statistics. A critical confidence level of the null statistical hypothesis of 0.05 was accepted.

Results

The clinical picture of vitiligo was characterized by white spots ranging in size from 3 mm to several centimeters in diameter, various in shape (usually round or oval) and in number, with a smooth surface. The contrast of the color of vitiligo foci and healthy skin varied depending on the patient's phototype and the presence of previous insolation.

The results of treatment of patients showed similar efficacy of both methods. As can be seen from table 1, after the end of treatment, most patients showed complete, pronounced or moderate treatment effectiveness. The total proportion of patients with such efficiency was 83.2% in the comparison group and 87.5% in the main group.

Table.

Evaluation of the treatment effectiveness of vitiligo patients

Efficiency	Comparison group, n=25		Main group, n=23	
	Abc	%	Abc	%
Full(100%)	4	16	5	21,7
Severe(51-99%)	12	47,2	12	53,1
Moderate(25-50%)	6	22,2	3	12,7
Weak(less than 25%)	2	13,2	2	9,4
No effect	1	5,6	1	3,1

During treatment, adverse events were not observed in patients of both groups.

Thus, the method of treating vitiligo with the use of PRP is clinically effective and safe, since its use allows obtaining clinical remission (full, severe or moderate effect) in 87.5% of cases..

An analysis of the content of pro-inflammatory cytokines showed that the use of this method in the treatment of vitiligo is pathogenetically substantiated, which was confirmed by a significant decrease ($p < 0.05$) in the concentrations of IL-1, 8, 10 and TNF- α in the blood plasma of patients of both groups relative to the initial values.

The dynamics of VEGF showed that if before the start of treatment its level was significantly higher than the control, then after treatment in both groups of vitiligo patients, a significant decrease in the concentration of VEGF relative to the initial level was observed ($p < 0.05$).

The use of PRP led to a significant ($p < 0.05$) increase in the content of melanin level by 2.1-2.2 times in the foci of the disease, an increase in this indicator in the group of patients who underwent phototherapy was similar. The clinically detected dynamics of this indicator was manifested by repigmentation of the affected skin. At the same time, no significant intergroup differences in the level of melanin were detected. It should be noted that during the observation period, adverse events were absent in both studied groups. It was found that the use of PRP in the treatment of vitiligo is safe, not accompanied by side effects, allergic and toxic reactions.

The discussion of the results

Vitiligo is a multifactorial disease that develops with a combination of genetic, metabolic and immunological disorders. Violation of the processes of regeneration and proliferation of melanocytes indicates the presence of defects in these cells.

Since neither the immunological, nor genetic, nor metabolic hypotheses alone can explain all aspects of the pathogenesis of this disease, the current understanding of the pathogenesis of vitiligo is based on an integrated approach. It is known that in response to damage to melanocytes, natural killer cells are activated and the expression of pro-inflammatory proteins, in particular heat shock proteins (HSP), and pro-inflammatory cytokines, the main of which are IL-1 β , IL-6, and IL-8, are enhanced [1, 2, 8]. The results of our study confirmed that in the blood plasma of vitiligo patients there is an increase in the concentrations of these cytokines.

Currently, the management of patients with vitiligo has several directions - clarification or elimination of foci of dyschromia, local and general photochemotherapy, and drug therapy [4]. One of the potentially effective methods of treating this pathology is the use of PRP, the immediate and long-term effectiveness of which has yet to be fully studied in clinical studies.

It should be noted that our results are consistent with the data presented in the reports of other authors. So, in a study of Z. A. Ibrahim et al. evaluated the effect of PRP injections on the results of short-term UV

therapy in vitiligo patients. The study included 60 patients with a common symmetrical lesion. For each patient, the left side of the body was treated only with UV, while the effect on the right side was supplemented with an intradermal injection of PRP every 2 weeks for 4 months. A statistically significant improvement in pigmentation was found in the combination treatment group compared to the UV therapy group. The authors conclude that the intradermal administration of PRP in combination with UV exposure can be considered as a simple, safe and cheap treatment for vitiligo.

Findings. Vitiligo treatment using PRP is clinically effective and safe because it allows for clinical remission in 87.5% of patients.

The treatment of vitiligo with PRP is pathogenetically justified; in patients, it normalizes the level of pro-inflammatory cytokines in the blood plasma - IL-1, 8, 10, TNF- α and VEGF.

The absence of adverse events associated with the proposed method for the treatment of vitiligo indicates that the use of PRP is safe, not accompanied by side effects, allergic and toxic reactions.

The use of PRP in the treatment of vitiligo leads to an increase in the level of melanin

2.0-2.2 times in the foci of the disease, which is clinically manifested by repigmentation of the affected areas of the skin.

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