

**Материалы и методы исследования.** Обследовано 80 пациентов с папуло-пустулезной стадией розовых угрей в возрасте от 19 до 69 лет. Степень выраженности клинических проявлений оценивалась по бальной системе и определялась частотой рецидивов, длительностью ремиссий и проявлениями: легкая степень (I степень тяжести) наблюдалась у 12 пациентов, средняя (II степень тяжести) – у 48 и тяжелая степень (III степень тяжести) – у 20.

**Результаты и обсуждение.** Выявлено большое количество сопутствующей патологии у пациентов с папуло-пустулезной стадией розовых угрей. По количеству сопутствующей патологии преобладали пациенты с тяжелым и среднетяжелым течением заболевания.

**Выводы.** Необходимо планировать лечебно-диагностические мероприятия с учетом клиничко-анамнестических особенностей и степени тяжести течения заболевания для достижения оптимального результата лечения.

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## CHANGES OF SOME PARAMETERS CLINICAL EXAMINATION OF PATIENTS WITH PSORIATIC ARTHRITIS

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**Objective.** To study the role of basis indexes of laboratory in spection of patients for clarification of their role in pathogeny of arthropathy psoriasis.

**Materials and methods.** The concentration of trigger cytokines - IL-1 $\beta$ , IL-8, IL-17, IL-22, stress hormones - ACTH and cortisol, state of cell-antibody mediated immunity (CD3+, CD4+, CD8+, CD16+, CD22+, IRI, IgM, IgG levels) in the serum of patients were defined.

**Results and discussion.** We have detected the possible changes of stress-reaction mediator concentrations in the serum of patients with PA (i.e. decreasing of the status of cell immunity indices (CD3+, CD4+, CD8+ T- lymphocytes, B- lymphocytes CD22+ fraction, IRI with compensatory increasing of the levels of CD16+ T-cells, cytokines — IL-1 $\beta$ , IL-8, IL-17, IL-22, stress hormone – cortisol, immunoglobulins IgM, IgG, CIC) irrespective of the disease duration which testifies the strain of their stress-realizing mechanisms, even if clinical stabilization of skin and joint process is normalized.

**Conclusions.** Thus, the final diagnosis of PA is determined only under aggregation of anamnestic, clinical, instrumental and laboratory data and the results of additional examinations. The indices mentioned above are key mediators of stress-realizing immune-neuroendocrine system and play an ambiguous role in the development of PA, their various effects require further study.

### Introduction

According to the literature the frequency index of psoriatic arthritis (PA) in patients with psoriatic disease (PD) varies from 1 to 13% [1, 2, 3]. In recent years there has been detected the tendency of increasing of patients with PA in Ukraine. This situation may be caused by the accumulation of several

factors such as: bad ecological situation in Ukraine, in sufficient level of material and living conditions which leads to psychoemotional stress and, as the result, to decreasing of clinical remission period in patient and more frequent relapses [4, 7, 10]. In 20-60 % of patients pathological processes are progressing in the association with the develop-

ment of osseous-articular destruction, disablement and notable worsening of the quality of life [3, 5, 6]. Substantial immunological changes (of humoral and cell sections of immunity), hormone and biochemical disorders, disorder of calcium-phosphorus balance naturally influence bone metabolism and cause systemic disorders in structural and functional state of bone and cartilage system in patients with PA [8, 9, 12]. No less actual is the relation of detected clinical-instrumental disorders, changes of some indices of hormone, immune and cytokine state. Today a lot of attention is paid to the role of components of stress-realizing immune-neuroendocrine system at PA development [4, 10, 11]. The objective of the work was to study the role of main indices of laboratory examinations of patients to specify their role in PA pathogenesis and to develop the system of integrated diagnostics of patients with PA whose locomotor system is affected due to psoriasis with the indication of characteristic features.

#### Materials and methods

178 patients with PA have been examined integrally for the four recent years. The volume of diagnostic measures has been defined based on the Order of the Ministry of Health of Ukraine No. 312 as of May 8, 2009. The diagnosis of PA was verified under the diagnostic criteria of the Institute of Rheumatology of RAMS. All patients with suspected or proved PA had their damaged joints examined radiologically (ultrasonography if necessary). Additional level of T- and B-lymphocytes subpopulations in patients with PA was determined under the guidelines on the application of erythrocyte diagnostic preparations to detect human T- and B-lymphocytes subpopulations "Anti-SD 3", "Anti-SD 4", "Anti-SD 8", "Anti-SD 16", "Anti-SD 22" produced by RDPF Granum LLC (Kharkiv). The concentration of general immunoglobulines of M (IgM) and G (IgG) classes in blood serum was determined by immune-enzyme analysis using "IgM (IgG) general - IFA - BEST" set produced by CJSC "Vector-Best -BEST", Novosibirsk. The content of IL-1 $\beta$ , IL-8, IL-17, IL-22 in blood serum was studied in accordance with the techniques and guidelines using appropriate test

systems (CJSC "Vector-Best -BEST", Novosibirsk) which are based on the sandwich-method of solid phase immune-enzyme analysis. The quantitative determining of cortisol concentration in blood plasma was performed using the appropriate reagent sets, i.e. "Cortisol - IFA - BEST" which are based on the method of solid phase immune-enzyme analysis with the application of monoclonal antibodies.

#### Results and discussion

It was established that for the last 20 years (1993-2014) the number of registered cases of psoriasis among the population in Lviv region has increased by 1.9 times. We have examined PA patients with varying severity of process development, generalization and the severity of skin and osseous-articular apparatus damage, the presence of associated pathology. In 57.9% of cases PA was diagnosed in individuals aged 30-49, mostly in men - 62.3%. The characteristic of pain syndrome was in the direct correlation with morning stiffness and pain. Asymmetric polyarthritis prevailed in 82.2% of patients with the affection of hand joints in 74.5%, feet joints - in 68.2%, knees joints - in 55.6%. The character of inflammatory process in patients with PA was the direct expressed correlation with acute condition agent and the term of the last disease recurrence within the limits from (+0.6) to (+0.7). The frequency of recurrent cases per year and the development of the PA last recurrence had the direct influence on the character of relapse. Joints affection totally depended on the efficacy of previous treatment and it is in positive expressed correlative dependence with thickening of periarticular tissues, its functional deficiency - with the sprain occurrence, subluxation - from (+0.8) to (+0.9). The analysis of laboratory examinations indicates the decreased number of thrombocytes, expressed hypoalbuminemia, hyper gammaglobulinemia. In 1/3 of patients with PA anemia was identified as well as increasing of BSR within the limits of 15-20 mm/h, from 21 to 40 mm/h - in 37 (20.8 %) of patients, more than 40 mm/h - 20 (11.2 %). The increased glucose level was identified in 44 (24.7 %) of patients, cholesterol and LDL - in 120 (67.4 %), creatinine -

in 83 (46.6 %). Alkaline phosphatase (AP) and its bone isoenzyme activity were within the limits of normal values except the patients who have been suffering from the disease for more than 20 years. This means that AP activity exceeds the norm more than 2.3-2.5 times and bone isoenzyme AP decreased in 2.6-2.7 times. Creatinine content in blood serum was lower than the norm in 86 (48.3%) of patients notwithstanding the duration of the disease. Calcium concentration in blood serum was within the norm limits. Phosphorus content tended to be increased in 1.2-1.3 times notwithstanding the duration of PA, thus testifying the disorder in catabolic and synthetic reactions. Indices of C-reactive protein were as follows: negative “-“ – in 54 (30.3%) of patients, “+” – in 77 (43.3%), “++” – in 31 (17.4%), “+++” – in 11 (6.2%) and “++++” – in 5 (2.8%) of cases. It was proved that PA activity is characterized by the expressiveness of functional deficiency of joints, the stage of their affection, and developing of disease are defined by joints affection signs, relapse and inflammatory process character that can be proved instrumentally. In the regard of patients with locomotion system disorder who suffer from psoriasis, by using ultrasound diagnostics, psoriatic enthesopathy was proved in 24 (13.41 %) of cases, including asymptomatic disease course – in 4 (2.23 %). Accurate USD PA signs have been identified: the presence of enthesitis, tendosynovitis of long muscle of finger flexor, hydrarthrosis, especially of knees joints (up to 3-25 ml), thickening of synovial (2 - 10 mm) and fibrous tunics (1-3 mm), and change in cartilage thickness. When the expressiveness of USD signs was correlated with radiology data, it was defined that in 19 (10.61 %) of patients no bone and joints changes had been detected on X-ray images, but USD images showed the signs of inflammatory manifestations on joint surface. This fact indicates that USD should be performed and testifies the assumption that PA starts to develop due to enthesopathy. Central affection in patients with PA is verified by the data of not only X-ray character, but also by MRT examination. Ostitis, being defined during MRT examination, should be treated as a premonitory

symptom of possible joint affection visible at further X-ray image and its future ankylosis. During radiological examination of patients with PA it was detected 88 (49.44 %) cases of PA and 66 (37.08 %) cases of deforming PA, at that, in 120 (67.42%) of cases PA was the dominant disease on clinical picture in the form of poly- or periartthritis of distal interphalangeal joints, at that, in 19 (10.67 %) of cases it was associated with axial affection of spine. At early stages of PA development using radiological examination the following facts were accurately defined more frequently than the others: non-uniform narrowing of joint gap, osteoporosis in bone epimetaphys area, erosions of distal flanges of feet and hands. In the case of progressing – partial or total destruction of closing plates with prevailing osteo-destructive (osteolysis, ankylosis) and osteo-proliferated (hyperostosis, periostitis) pathological processes over osteoporosis. The estimation of the obtained results of historical ultrasound densitometry and at the time of examining has shown that in 38 % of patients with PA the indices of bony tissue state are within the norm limit, in 45% – osteopenia is detected and only in 17% of cases osteoporosis was confirmed. In blood serum of patients with PA, not with standing the duration of the disease, we have detected the possible changes in concentrations of stress reaction mediators (decreasing of indices of cell immunity (CD3+, CD4+, CD8+ T-lymphocytes, fractions CD22+ of B-lymphocytes with compensatory decreasing of CD16+ T-cells levels, cytokines — IL-1 $\beta$ , IL-8, IL-17, IL-22, stress hormone – cortisol, immunoglobulines IgM, IgG, CIC) that testifies the strain of their stress-realizing mechanisms even sometimes despite clinical stabilization of skin-joint process. In PA patients a stable tendency for decreasing of functional activity indices of T-, B-lymphocytes of system in comparison with the control group of healthy individuals was defined, in particular, possible decreasing of the number of immune-competent cells with phenotype CD3+ (0.90 $\pm$ 0.03 g/L – in PA patients and 1.80 $\pm$ 0.02 g/L - in control group), CD4+ (0.54 $\pm$ 0.02 g/L - in PA patients and 0.62 $\pm$ 0.03g/L - in control

group), CD 22+ or B- lymphocytes ( $0.39 \pm 0.01 \text{ g/L}$  - in PA patients and  $0.73 \pm 0.03 \text{ g/L}$  - in control group), moderate decreasing of CD8+ ( $0.37 \pm 0.01 \text{ g/L}$  - in PA patients and  $0.46 \pm 0.01 \text{ g/L}$  - in control group) and increasing of CD16+ content ( $0.31 \pm 0.01 \text{ g/L}$  - in control group and  $0.38 \pm 0.02 \text{ g/L}$  - in PA patients). Herewith, at the onset of PA more expressed tendency for decreasing of specified indices than at clinically expressed PA with formed joint pathology and functional deficiency was observed. This indicates the possibility of apoptosis development and is important as it is considered to be one of the mechanisms of forming of inadequate programmed death of immunocytes. When humoral immunity of patients with various forms of PA was estimated, the general increase in immunoglobulines Ig G ( $48.5 \pm 2.7 \text{ mg/ml}$  and  $9.6 \pm 1.5 \text{ mg/ml}$  - in control group), moderate increase in Ig M ( $2.8 \pm 0.1 \text{ mg/ml}$  and  $0.9 \pm 0.7$  - in control group) and high level of CIC ( $139.7 \pm 5.7 \text{ SU}$  and  $43.1 \pm 4.4 \text{ SU}$  - in control group) was identified. This fact is necessary to estimate anti-inflammatory function of immune system and the development of pathological process in PA patients. The detected increased concentration of IgG, IgM and CIC in blood of patients with PA may be considered as an indirect characteristic of the presence of persisted infection which promotes the initiation and residence of inflammatory process activity. The most important disorders are observed after PA has been developing for 10 years. The indicated immune indices were in the direct expressed correlative relation with CIC level and index of C-reactive protein - from (+0.8) to (+0.9). In blood serum of patients suffering PA prior to treatment it was obtained deviation of increased level of IL-1 $\beta$  ( $15.7 \pm 1.5 \text{ pg/ml}$  at  $1.8 \pm 1.2 \text{ pg/ml}$  - in control group), IL-8 ( $53.9 \pm 17.4 \text{ pg/ml}$  at  $2.5 \pm 1.5 \text{ pg/ml}$  - in control group), IL-17 ( $17.0 \pm 2.1 \text{ pg/ml}$  at  $1.6 \pm 0.5 \text{ pg/ml}$  - in control group) and IL-22 ( $24.5 \pm 1.4 \text{ pg/ml}$  if com-

pared with the norm of  $5.4 \pm 1.3 \text{ pg/ml}$ ). In the case of extended PA with expressed bone destructive changes and in synovial liquid higher values of specified cytokines were observed. It was stated that the specified cytokines in blood serum and synovial liquid (IL-1 $\beta$ , IL-8, IL-17, IL-22) are the key mediators of integrated stress-realizing immune system, as, from one side, they provoke inflammatory reaction, and from the other side they promote remodeling of tissue and regulate bone lysis processes as well as joint contractures forming. We assume that increasing of concentration of specified cytokines in blood serum of PA patients is 2 times higher during first 6 months starting from the moment of joint syndrome occurrence, and this fact may be used as the additional criterion for PA early diagnostics. Thus, changes in indices should be used to evaluate activity, disease stage and efficacy of treatment provided. In patients with PA prior to treatment it has been noted a significant increase in serum cortisol (up to  $803.0 \pm 42.9 \text{ nmol/L}$ ) which is almost 2 times higher than the corresponding reference values; at that, its highest growth was observed in patients with expressed bone pathology. As cortisone is the regulator of carbohydrate, protein and fat metabolism, thus, if cholesterol, glucose, protein levels are changed and increased it is considered to be a characteristic feature of PA. Only an integrated approach to the examination of patients with damaged locomotor system can provide the efficacy of early PA diagnostics and treatment.

### Conclusions

Thus, the genetic susceptibility to psoriasis development of any segment in immune-neuroendocrine system creates the risk of dysregulation pathology in multifaceted clinical forms of PD, PA with relevant clinical and functional changes. That is why, the final diagnosis of PA should be determined only by aggregation of anamnestic, clinical, instrumental and laboratory data and the results of additional examinations.

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## РЕЗЮМЕ

### ЗМІНИ ДЕЯКИХ ПОКАЗНИКІВ КЛІНІЧНОГО ОБСТЕЖЕННЯ ХВОРИХ НА АРТРОПАТИЧНИЙ ПСОРИАЗ

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**Мета роботи.** Вивчити роль основних показників лабораторного обстеження хворих для уточнення їх ролі в патогенезі артропатичного псоріазу.

**Матеріали і методи.** У сироватці крові хворих визначалися концентрації тригерних цитокінів - ІЛ-1 $\beta$ , ІЛ-8, ІЛ-17, ІЛ-22, стресорні гормонів - АКТГ і кортизолу, стану клітинно-гуморального імунітету (CD3+, CD4+, CD8+, CD16+, CD22+, ІРІ, рівні ІgM, ІgG).

**Результати та обговорення.** У сироватці крові пацієнтів з артропатичним псоріазом виявлено незалежно від терміну захворювання вірогідні зміни концентрацій медіаторів стрес-реакції (зменшенням стану показників клітинного імунітету (CD3+, CD4+, CD8+ Т-лімфоцитів, фракції CD22+ В-лімфоцитів, ІРІ з компенсаторним підвищення рівнів CD16+ Т-клітин, цитокінів — ІЛ-1 $\beta$ , ІЛ-8, ІЛ-17, ІЛ-22, стресорного гормону – кортизолу, імуноглобулінів ІgM, ІgG, ЦІК), що свідчить про напруженість їх стрес-реалізуючих механізмів. навіть інколи попри їх клінічну стабілізацію шкірно-суглобового процесу.

**Висновки.** Остаточний діагноз артропатичного псоріазу визначатися тільки за сукупності анамнестичних, клінічних, інструментальних, лабораторних даних і результатів додаткових методів обстеження. Зазначені показники є ключовими медіаторами стрес-реалізуючої імуноендокринної системи і відіграють неоднозначну роль при розвитку артропатичного псоріазу, а їх різноманітні ефекти вимагають подальшого вивчення.

## РЕЗЮМЕ

### ИЗМЕНЕНИЯ НЕКОТОРЫХ ПОКАЗАТЕЛЕЙ КЛИНИЧЕСКОГО ОБСЛЕДОВАНИЯ БОЛЬНЫХ С АРТРОПАТИЧЕСКИМ ПСОРИАЗОМ

О.О.Сизон

**Цель работы.** Изучить роль основных показателей лабораторного обследования больных для уточнения их роли в патогенезе артропатического псориаза.

**Материалы и методы.** В сыворотке крови больных определялись концентрации триггерных цитокинов - ІЛ-1 $\beta$ , ІЛ-8, ІЛ-17, ІЛ-22, стрессорных гормонов - АКТГ и кортизола,

состояния клеточно-гуморального иммунитета (CD3 +, CD4 +, CD8 +, CD16 +, CD22 +, ИРИ, уровне IgM, IgG).

**Результаты и обсуждение.** В сыворотке крови пациентов с артропатическим псориазом выявлены независимо от срока заболевания вероятные изменения концентраций медиаторов стресс-реакции (уменьшением состояния показателей клеточного иммунитета (CD3 +, CD4 +, CD8 + Т-лимфоцитов, фракции CD22 + В-лимфоцитов, ИРИ с компенсаторным повышением уровня CD16 + Т-клеток, цитокинов - IL-1 $\beta$ , IL-8, IL-17, IL-22, стрессорного гормона - кортизола, иммуноглобулинов IgM, IgG, ЦИК), что свидетельствует о напряженности их стресс-реализующих механизмов, даже иногда несмотря на их клиническую стабилизацию кожно суставного процесса.

**Выводы.** Окончательный диагноз артропатического псориаза определялся только по совокупности анамнестических, клинических, инструментальных, лабораторных данных и результатов дополнительных методов обследования. Указанные показатели являются ключевыми медиаторами стресс-реализующей иммунонейроэндокринной системы и играют неодолеваемую роль при развитии артропатического псориаза, а их разнообразные эффекты требуют дальнейшего изучения.

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## EVOLUTION OF SYSTEMIC IMMUNITY IN PATIENTS WITH PYODERMA SIN IN THE COURSE OF A STANDARD AND COMPREHENSIVE TREATMENT BY LASER THERAPY

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**Objective.** To determine evolution of the systemic immunity indices in patients with pyoderma sin in the course of a standard and comprehensive treatment by laser therapy.

**Materials and methods.** We observed 57 patients with chronic and disseminated forms of pyoderma aged 18-69 years; 29 of them received standard therapy, other 28 patients were additionally prescribed combined (superficial venous and external) laser therapy. We determined the indices of all patients' systemic immunity using well-known techniques.

**Results and discussion.** It has been established, that using laser therapy in comprehensive treatment of patients with pyoderma promotes the normalization or a tendency to normalization of the systemic immunity and phagocytosis with significant difference between the indices of the individuals who received a standard therapy alone.

### Introduction

Pyoderma are a group of pustular skin diseases, which constitute about 30% in the structure of skin pathologies and, at present, tend to be disseminated skin lesions, to

develop deep and chronic forms, which result in decreasing a patient's capacity and social activity that defines the essential health and social value of pyoderma problems [1, 5, 11]. It was established, that the development of