КЛІНІЧНА МЕДИЦИНА

UDC 616.517-056.5

DOI https://doi.org/10.31718/mep.2020.24.1-2.01

FEATURES OF THE CLINICAL COURSE OF PSORIASIS IN PATIENTS WITH OBESITY

Yemchenko Ya.O., Ischeikin K.Ye.

Ukrainian Medical Stomatological Academy (Poltava)

Псоріаз є найбільш розповсюдженим хронічним, генетично детермінованим аутоімунним поліетіологічним запальним захворюванням з порушенням епідермальної проліферації, що провокується екзогенними і ендогенними факторами та проявляється еритематозно - лускатими елементами, папулами і бляшками. За результатами клініко – епідеміологічних досліджень, на псоріаз хворіє біля 3-4 % населення нашої планети, незалежно від статі, віку та етнічної групи, при цьому питома вага цієї патології в загальній структурі шкірних хвороб сягає, за даними різних авторів, від 1% до 40%. Однак, незважаючи на значне поширення псоріазу та на велику кількість робіт з цієї проблеми, до сих пір немає єдиного погляду на патогенез цього дерматозу. Для об'єктивного розуміння патогенезу псоріазу необхідно враховувати недостатньо вивчену коморбідність цієї патології. Тому, при дослідженнях патогенезу псоріазу в останні роки все більше уваги приділяється порушенням метаболічних процесів. Останнім часом доведений безперечний зв'язок між псоріазом і ожирінням. Встановлено, що ожиріння веде до підвищення ризику розвитку багатьох захворювань, в тому числі псоріазу. В літературі широко висвітлюється питання про ідентичні патогенетичні механізми запальних процесів при псоріазі і ожирінні, що формують порочне коло на рівні імунної системи, яке необхідно розірвати для успішного лікування даних захворювань. У цьому досліджені ми вивчали клінічну картину захворювання, вимірювали антропометричні показники, визначали ступінь ожиріння по ІМТ, аналізували анамнез життя і захворювання та проводили дослідження клінічного і біохімічного аналізів крові. За результатами проведеного дослідження виявлено, що аліментарне ожиріння у хворих на псоріаз призводить до метаболічних порушень ускладнюючи перебіг дерматозу, що призводячи до погіршення ДІЯЖ пацієнтів, неефективності стандартних методів терапії та частих загострень псоріатичної хвороби. Тому перспективою подальших досліджень є більш поглиблене вивчення коморбідності псоріатичної хвороби, що дозволить виявити нові мішені терапії даного дерматозу для попередження ускладнень та більш ефективного лікування даної патології.

Ключові слова: псоріаз, аліментарне ожиріння, патогенез, клініка.

Psoriasis is the most common chronic, genetically determined autoimmune polyetiological inflammatory disease with impaired epidermal proliferation, provoked by exogenous and endogenous factors, and manifested by erythematous and scaly elements, papules and plaques. According to the results of clinical and epidemiological studies, psoriasis affects about 3-4% of the population of our planet, regardless of gender, age, and ethnic group, and the specific gravity of this pathology in the general structure of skin diseases reaches, from the data of different authors, from 1% to 40 %. However, despite the significant incidence of psoriasis and a large amount of research on this problem, there is still no single view of the pathogenesis of this dermatosis. For an objective understanding of the pathogenesis of psoriasis, it is necessary to take into account the insufficiently studied comorbidity of this pathology. Therefore, in the studies of the pathogenesis of psoriasis in recent years, more attention is paid to the impairment of metabolic processes. Recently, an indisputable link between psoriasis and obesity has been proven. Obesity has been found to increase the risk of many diseases, including psoriasis. The literature has broadly highlighted the question of the pathogenetic mechanisms of inflammatory processes in psoriasis and obesity that form a vicious circle at the level of the immune system, which must be broken for the successful treatment of these diseases. In this research, we studied the clinical presentation of the disease, measured anthropometric parameters, determined the grade of obesity by BMI, analyzed the history of life and disease, and conducted clinical and biochemical blood tests. The results of the study revealed that alimentary obesity in patients with psoriasis leads to metabolic disorders, complicating the course of dermatosis, which leads to a worsening of the DLQI of patients, the inefficiency of standard methods of therapy and frequent exacerbations of psoriatic disease. Therefore, the prospect for further research is a more in-depth study of the comorbidity of psoriatic disease, which will identify new targets for the treatment of this dermatosis to prevent complications and more effective treatment of this pathology.

Key words: psoriasis, alimentary obesity, pathogenesis, clinical presentation.

To cite this English version: Yemchenko Ya.O., Ischeikin K.Ye.Features of the clinical course of psoriasis in patients with obesity . // The Medical and ecological problems. – 2020. - Vol 24, № 1-2. - P. 3-7.

«Study of the pathogenetic role of the circadian molecular clock in the development of metabolic diseases and systemic inflammation and the development of treatment methods aimed at these processes» (state registration number 010U101166).

Psoriasis is one of the most common chronic recurrent multifactorial diseases of the skin with a predominance of genetic bias, characterized by hyperproliferation of epidermal cells, impaired keratinization due to inflammatory reaction in the dermis, as well as the lesions of nails and joints [1]. According to the results of clinical and epidemiological studies, about 3-4% of the population of our planet, regardless of gender, age and ethnic group, suffers from psoriasis, and the share of this pathology in the general structure of skin diseases, according to various authors, ranges from 1% to 40 % [2]. However, despite the considerable spread of psoriasis and a large amount of research on this problem, there is still no single view of the pathogenesis of this dermatosis. In order to objectively understand the pathogenesis of psoriasis, it is necessary to take into account the understudied comorbidity of this disease [3].

Recently, an indisputable link between psoriasis and obesity has been proven. Alimentary obesity develops as a result of metabolic and eating behavior disorders. It is characterized by the accumulation of adipose tissue in the body. Obesity can be both an independent multifactorial disease – primary obesity (alimentary-constitutional), and a syndrome that accompanies the course of other diseases – secondary obesity (symptomatic). In the structure of morbidity, primary obesity occurs in 95% of patients, secondary – only in 5% [4]. The main etiological reason for the development of primary obesity is the alimentary factor. The inhabitants of developed countries are currently the hostages of readily available food. In this context, the food moves from the category of necessity to the category of pleasure. Thus, eating disorders are gradually formed, which anticipates the development of obesity. Most often, obesity occurs as a result of consuming foods of high energy value (caloric content) in combination with insufficient physical activity and a factor of genetic susceptibility. However, in isolated cases, the occurrence of the disease against the background of genetic endocrine disruptions or malignancies was observed [5]. A person is considered obese if the body mass index (BMI) exceeds 30 kg / m². Obesity has been found to increase the risk of many diseases, including psoriasis, contributing to its severe course with prolonged periods of relapse, which are poorly treated with standard therapy. In contrast, weight loss leads to a more favorable course of dermatosis [6]. The literature has broadly covered the issue of identical pathogenetic mechanisms of inflammatory processes in psoriasis and obesity, which form a vicious circle at the level of the immune system, which must be broken in order to treat these diseases successfully [7]. Therefore, further study of the comorbidity of psoriatic disease and obesity makes it possible to identify new target therapies to prevent complications and develop a more effective treatment of this pathology [8].

The aim of the research is to study the features of the clinical course of psoriasis in patients with grade I-II alimentary obesity.

Materials and methods

The study group consisted of 80 patients with advanced uncomplicated plaque psoriasis, progressive stage, moderate severity with concomitant grade I-II alimentary obesity, 51 (64%) men, and 29 (36%) women aged from 35 to 65 years.

To identify the features of the clinical course of psoriasis combined with grade I-II alimentary obesity, as a control for comparison of the studied parameters, we selected a group of patients, consisting of 20 persons of the appropriate age (8 women and 12 men), patients with common, vulgar psoriasis of moderate severity, progressive stage of the course with normal body weight.

The Psoriatic Area and Severity Index was used to assess the severity of psoriasis [9].

To determine the impact of skin rashes on the quality of patients' life, we used the DLQI (Dermatology Life Quality Index) questionnaires for assessment of the quality of life of dermatological patients [10, 11].

To assess the severity of alimentary obesity, we determined body mass index (BMI) [12]. The study included individuals with a BMI of 30-40 kg / m².

The volume of laboratory studies included the use of conventional methods of general clinical and biochemical blood tests, taken in the morning on an empty stomach. Studies of lipid metabolism were performed by estimating the level of total cholesterol (TC) and triglycerides (TG). The concentration of cholesterol in the composition of very-low-density lipoproteins (VLDL cholesterol) was determined by the ratio TG / 22.5. Dyslipidemia was diagnosed when the level of TC was greater than 5.2 mmol / l, triglycerides higher than 1.7 mmol / l, VLDL less than 1.0 mmol / l. The parameters were evaluated according to the criteria of the US National Cholesterol Education Program [13, 14].

The statistical processing of the results was performed using Statistica 7.0. The difference was considered reliable with a probability of error $p < 0.05$.

Results and discution

In all patients, the clinical presentation of the disease was studied, anthropometric parameters were measured, the grade of obesity by BMI was determined, the history of life and disease was analyzed, and clinical and biochemical blood tests were conducted.

Based on the clinical presentation of psoriatic lesions, the PASI index was calculated, reflecting the area, color intensity, infiltration, and desquamation of psoriatic rash. Analyzing the results, it was found that the average group PASI index in patients with psoriasis and concomitant grade I-II alimentary obesity was - (21.8 ± 1.4), and in patients with psoriasis without obesity - (15.2 ± 1.2). The obtained results correspond to the average severity of psoriasis in both groups of patients. However, it should be noted that the average group PASI index was 30.3% higher in the group of patients with concomitant grade I-II alimentary obesity. The difference in PASI indexes depended on the severity of infiltration and hyperemia, while the area and intensity of psoriatic rash were approximately the same. Thus, in patients with psoriasis and concomitant grade I-II alimentary obesity, psoriatic rashes had a stagnant-red color with pronounced infiltration, whereas in patients without obesity, rashes had a pink color with less pronounced infiltration phenomena.

All patients complained of sleep disturbance, unrest, and anxiety, which resulted in poor quality of life. To study the impact of the disease on the patient's quality of life, we calculated the dermatological quality of life index (DLQI). Analyzing the results of the study, it was found that in patients with psoriasis and concomitant grade I-II alimentary obesity, the DLQI index was 20.3 ± 0.5 points,

whereas in patients without obesity it was 14.5 ± 0.4 points, which indicates the pronounced impact of the disease on the quality of life for patients in both groups. It should be noted that the average group DLQI index is by 28.6% higher in the group of patients with concomitant grade I-II alimentary obesity.

From the history of the disease, it is known that all patients repeatedly received traditional outpatient and inpatient treatment for psoriasis. Patients with psoriasis and concomitant grade I-II alimentary obesity noted dissatisfaction with the treatment due to the duration of therapy and short periods of remission up to 3 months with episodes of exacerbation 3-4 times a year, and some of them did not notice complete recovery. Some of them indicated the presence of permanent (the so-called "regular") plaques, while patients with psoriasis without obesity were satisfied with the treatment, most noted the seasonality of the disease with recurrence of psoriasis 1-2, sometimes 3 times a year.

Thus, a significantly higher number of exacerbations was observed in patients with psoriasis and concomitant grade I-II alimentary obesity, which indicates a more severe course of psoriasis in combination with this pathology. It should be noted that patients with psoriasis and concomitant grade I-II alimentary obesity, and psoriasis patients with normal body weight received only general anti-psoriatic therapy, without taking into account the comorbid conditions, which could affect the insufficient effectiveness of treatment.

In the examination of patients who made up the study group and BMI calculation according to the classification of obesity, it was found that 29 (36.25%) patients had grade I obesity (average group BMI - 34.04 kg / m²), grade II obesity - 51 (63.75%) patients (average group BMI - 38.15 kg / m²). The average BMI in the control group of patients with normal body weight was 24.5 kg / m², which is by 35.8% lower than in the group of patients with psoriasis and concomitant grade I-II alimentary obesity (Table 1).

Table N 1.
Clinical and anthropometric parameters of the examined patients (M±m)

Indicator	Value	
	Study group (n=80)	Control group (n=20)
PASI (points)	21.8±1.4*	15.2±1.2
DLQI (points)	20.3±0.6*	14.5±0.7
BMI (kg/m²)	Value (number of patients)	
Normal weight	0	24.5 (20)
grade I obesity	34.04 (29)	0
grade II obesity	38.15 (51)	0
Number of psoriasis relapses:	Number of patients	
Once a year	0	6
2 times a year	0	12
3 times a year	13	2
4 times a year	67	0

In order to evaluate metabolic disorders in patients with psoriasis and concomitant grade I-II alimentary obesity, we conducted studies of general and biochemical blood tests (Tables 2, 3).

Table 2
he data of general blood analysis in the examined patients (M±m)

Indicator (reference value)	Value	
	Patients with psoriasis with grade I-II obesity (n=80)	Patients with psoriasis without obesity (n=20)
Hemoglobin, (g/l) Men – 130-160 Women – 120-140	128.5±5.8	147.3±6.5
Erythrocytes, (10^9/l) Men – 4.5-5.0 Women – 4.0-4.5	4.2±0.4	4.6±0.5
Color index 0.85-1.1	0.93±0.09	1.2±0.1
Leukocytes, (10^9/l) 4.0-9.0	7.2±1.3	5.2±1.2
Stab neutrophils, (%) 1.0-6.0	1.53±0.21	2.4±0.35
Segmented neutrophils, (%) 47.0-72.0	63.25±3.1	65.8±3.2
Eosinophils, (%) 0.5-5.0	3.8±1.2	2.5±0.7
Basophils, (%) 0-1.0	9.0±0.2	0.7±0.4
Lymphocytes, (%) 19.0-37.0	26.73±2.62	20.1±1.9
Monocytes, (%) 3.0-10.0	4.65±0.58	5.3±0.73
ESR, (mm/h) 2-15	11.5±1.1*	7.3±1.0

*Note: * The probability of error of differences p<0.05*

Table 3.
The data of biochemical analysis of blood in the examined patients (M±m)

Indicator (reference value)	Value	
	Patients with psoriasis with grade I-II obesity (n=80)	Patients with psoriasis without obesity (n=20)
Total protein, g/l 64.0-83.0	61.7±2.4	68.3±2.8
Albumin, g/l (38-54)	45.3±2.6	46.5±2.5
Globulin, g/l (20-30)	26.8±2.3	24.7±2.5
Albumin-globulin ratio (1.2-2)	1.7±0.19	1.83±0.17
Total bilirubin, μmol/l 8.0-21.0	18.6±1.7	14.7±1.5
ALT, units/l: men – 5.0-41.0 women – 5.0-31.0	38.9±2.9	36.5±2.3
AST, units/l: men – 5.0-41.0 women – 5.0-31.0	39.6±2.7	36.3±2.4
Thymol test, IU (H-S) (0-4)	1.4±0.15	1.3±0.17
Total cholesterol, μmol/l 3.0-6.2	7.5±0.3*	5.2±0.2
HDL (1.04-1.55 μmol/l)	0.98±0.1	1.3±0.2
LDL (0-2.59 μmol/l)	3.95±0.25*	2.9±0.15
Triglycerides, mmol/l (0-1.7)	2.4±0.05*	1.5±0.08
Glucose, 3-6 mmol/l	6.05±0.7	5.5±0.5
Urea, mmol/l 2.5-8.3	5.04±0.23	5.2±0.21
Creatinine, mmol/l 50.0-120.0	87.95±6.7	89.2±6.3

*Note: * The probability of error of differences p<0.05*

Analyzing the data presented in Table 2, it can be noted that the level of all indicators is within the norm, both in patients with psoriasis and concomitant grade I-II alimentary obesity and in patients with psoriasis and normal body weight. However, it should be noted that in general blood analysis of patients with psoriasis and concomitant grade I-II alimentary obesity, we revealed moderate differences, characterized by a decrease in the amount of hemoglobin by 12.8%, the total number of erythrocytes by 8.7%, CI by 5%, stab and segmented neutrophils by 36.3% and 3.9% respectively, monocytes by 12.3%, and leukocytes increase by 38.5%, eosinophilia by 52%, basophils by 28.6%, lymphocytes by 33% and an increase in ESR by 57.5% as compared to the rates of patients with psoriasis and normal weight.

When analyzing the data of biochemical blood analysis in patients with psoriasis with concomitant grade I-II alimentary obesity, significant differences were found in comparison with patients with psoriasis without obesity. Thus, in patients with psoriasis with concomitant grade I-II alimentary obesity, there was an increase in glucose by 10%, total cholesterol by 44.2%, triglycerides by 60% and LDL by 36%, as well as a decrease in HDL by 4.6%, total protein by 10.5% as compared to patients with normal body weight psoriasis, indicating impaired hepatic function by reducing the total protein and disrupted lipid metabolism with the effects of dyslipoproteinemia, characterized by an increase in the content of total cholesterol, LDL, triglycerides, decreased HDL levels. It should be noted that in patients with psoriasis with concomitant grade I-II alimentary obesity, there were more significant disruptions of the above indicators. Thus, the study found that patients with psoriasis with concomitant grade I-II alimentary obesity have a more severe course of dermatosis as compared to patients with psoriasis with normal body weight, which is well observed by the PASI and DLQI of patients and the incidence of psoriasis exacerbations.

Conclusions

Alimentary obesity in patients with psoriasis leads to metabolic disorders, complicating the course of dermatosis and worsening the patient's DLQI, leading to inefficiency of standard methods of therapy and frequent exacerbations of psoriatic disease.

References

1. Valdimarsson H, Thorleifsdottir RH, Sigurdardottir SL et al. Psoriasis - as an autoimmune disease caused by molecular mimicry. Trends Immunol 2009; 30 (10): 494-501.
2. Yemchenko Ya, Ischeykin K, Kaydashev I. Analiz zahvoryuvanosti ta poshirenosti na psoriaz v Ukraïni ta v Poltavs'kiy oblasti [Analysis of the incidence and prevalence of psoriasis in Ukraine and in the Poltava region]. Aktual'ni problemi suchasnoï medicini: Visnik ukraïns'koï medichnoï stomatologichnoï akademiï. 2014; 3 (47):72-76.
3. Yemchenko Ya. Osobennosti klinicheskogo techeniya psoriaza u bol'nyh s soputstvuyuschim metabolicheskim sindromom v zavisimosti ot urovnya sistemnogo vospaleniya [Peculiarities of the clinical course of psoriasis in patients with concomitant metabolic syndrome depending on the level of systemic inflammation]. Georgian Medical News. 2014; 11 (236):43-47.
4. Yemchenko Ya, Ishcheikin K. Deiaki spilni aspekty patohenezu psoriazu ta metabolichnoho syndromu. Svit medytsyny ta biolohi [Some common aspects of the pathogenesis of psoriasis and metabolic syndrome]. 2013; № 1:176-180.
5. Atkinson RL. Could viruses contribute to the worldwide epidemic of obesity Int J Pediat Obes. 2008; 3: Suppl 1: 37-43.
6. Kaydashev IP. Izmenenie obraza zhizni, narushenie energeticheskogo metabolizma i sistemnoe vospalenie kak faktory razvitiya bolezney civilizacii [Lifestyle changes, impaired energy metabolism and systemic inflammation as factors for the development of civilization diseases]. Ukraïns'kiy medichniy chasopis. 2013; 5: 103-108.
7. Babak OYa, Yarmish NV, Shkol'nik VV. Ozhirinnya yak puskoviy mehanizm adipocitokinovogo kaskadu [Obesity as a trigger mechanism of the adipocytokine cascade]. Medicina transportu Ukrainy. 2012; 2: 94-99.
8. Yemchenko Ya. Ozhyrinnia yak komorbidnyi stan pry psoriazi [Obesity as a Comorbid Condition in Psoriasis]. Visnik ukraïns'koï medichnoï stomatologichnoï akademiï. 2018; 18 (63):314-319.
9. National Institutes of Health (NIH), National Heart, Lung, and Blood Institute (NHLBI). The practical guide: identification, evaluation, and treatment of overweight and

obesity in adults. Bethesda: National Institutes of Health. 2000, NIH publication 00-4084.
10. Finlay AY and Khan GK. Dermatology Life Quality Index (DLQI): a simple practical measure for routine clinical use. Clin Exp Dermatol 1994; 19:210-216.
11. Basra MK, Fenech R, Gatt RM, Salek MS and Finlay AY. The Dermatology Life Quality Index 1994-2007: a comprehensive review of validation data and clinical results. Br J Dermatol 2008; 159:997-1035.
12. Fredriksson, T., U. Pettersson. Severe psoriasis—oral therapy with a new retinoid. Dermatologica, 1978, 157(4):238-44. PMID 357213.
13. Executive summary of the Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) // JAMA. – 2001. – Vol. 285, 19. – P. 2486-2497.
14. Morris P.B., Ballantyne C.M., Birtcher K.K. et al. Review of clinical practice guidelines for the management of LDL-related risk // J. Am. Coll. Cardiol. – 2014. – Vol. 64. – P. 196–206.

Матеріал надійшов до редакції 15.01.2020.