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INDICES OF SYSTEMIC IMMUNITY IN PATIENTS WITH ECZEMA OF DERMATOSIS DIFFERENT CLINICAL COURSE

***Key words**: eczema, clinical course, systemic immunity.*

***Abstract.** Patients with eczema experienced significant changes in systemic immunity indexes that indicate the presence of immunomediated mechanisms of the development involving T link immunity, with multi-directional changes of subpopulations of T lymphocytes in patients with different clinical forms of dermatitis. It was established that more significant changes in rates of systemic immunity were observed in patients suffering from eczema with advanced skin lesions and prolonged (over 3 years) course of dermatosis which justifies the advisability of administering adequate, immunocorrective therapy for such patients.*

Introduction

Eczema is one of the most common allergic skin diseases, which is registered in 20-40% of dermatological patients [2,10]. The increase of a number of common and complicated forms, chronic course of dermatosis with frequent relapses and development of resistance to basic therapy in patients, which reduces their quality of life and social activity, suggests important medical and social significance of this dermatosis [3,12].

According to current data, the pathogenesis of eczema is complex and multifactorial. Eczema appears under the influence of both exogenous factors and disorders of immune response, neurohumoral and endocrine regulation, genetic determinism, related diseases of the digestive system, leading to metabolic disorders, autosensitisation etc. [1, 3,11].

It has been established that the changes in systemic immunity plays an important role in the development of dermatoses and their becoming chronic [4,5], but the role of immune mechanisms in the pathogenesis of eczema is not fully elucidated, since data on cellular and humoral immune system is often ambiguous, contradictory, indicating their diverse disorders in chronic dermatoses [6,9]. In this connection determining systemic immunity condition in patients with eczema suffering from different dermatosis clinical course is urgent.

Objective

To determine and analyse the condition of systemic immunity indices depending on dermatosis clinical course in patients with eczema.

Material and methods

An examination of 92 patients with eczema, including 49 men and 43 women, aged from 18 to 59 years old has been carried out.

The criteria for inclusion in the study were the following: clinical manifestations of eczema; patient's age - 18 years or more; absence of chronic physical illnesses or their exacerbation at the time of the patient's examination.

According to clinical criteria [3], the majority (63 people - 68.5%) of patients were diagnosed with microbial eczema, including varicose, and paratraumatic and mycotic ones, the remaining 29 (31.5%) patients had real (true) eczema. In 57 (62.0%) patients with eczema the pathological process in the skin was widespread, in 35 (38.0%) it was limited. 29 (31.5%) patients with eczema were diagnosed for the first time, and had acute or subacute clinical course, in 25 (27.2%) it lasted from 1 to 3 years and in 38 (41.3%) - over 3 years. The control group involved 35 healthy individuals (donors) of the same age.

In order to assess the condition of cellular and humoral immune system in patients with eczema we determined: relative and absolute number of general and T- lymphocytes, the relative number of T-helper (Th) and T-suppressor lymphocytes (Ts) immunoregulatory index (Tx/T), relative and the absolute number of B-lymphocytes, serum immunoglobulin of (Ig) classes M, G, A and circulating immune complexes (CIC) by known methods [8].

Statistical analysis of the results of research was carried out by the methods of statistical analysis [7] using the computer program Statistica 6.0 the difference of averages at $p < 0.05$ was taken as the probable.

Discussion

In determining the parameters of systemic immunity in 92 patients with eczema, the results of which are presented in the table, the signs of infectious syndrome, mainly reducing T-cell population of lym-

phocytes were established. Thus, the examined patients with eczema had probable, compared to indices of the control group, reduction of the absolute number of common pool of lymphocytes (by 18.2%, p <0.001), and the relative and absolute number of common T lymphocytes (by 14.1% and 21.1%, p <0.001 respectively). However, patients with eczema experienced some changes in the cell structure of subpopulations of T- lymphocytes: the likely reduction in the relative number of T-suppressor lymphocytes (by 25.4%; p<0.001) with less significant decrease in the number of T-helper lymphocytes (by 8.4%, p=0.003) with significant changes of IRI index (increased by 1.3 times, p=0.007).

The examined patients with eczema also had probable reduction in the absolute number of lymphocytes (23.8%; p<0.001) with a tendency of decreasing their relative amount (by 6.7%; p=0.071). The analysis of the humoral immune system in patients with eczema revealed (Table) probable increase in serum immunoglobulin G (by 15.7%, p<0.001), immunoglobulin A (by 12.5%, p<0.001) without significant changes in the level of immunoglobulin M. The patients also have significant increase of CIC in the content of serum (by 10.4%, p<0,001).

An analysis of systemic immunity indices in patients with different clinical forms of eczema has showen that patients suffering from true eczema, have probable, compared to the control group, decrease in relative and absolute number of T-lymphocytes (13.6% and 23.3%, p<0.001 respectively), reduction of T-suppressor lymphocytes (by 30.1%, p<0.001) without significant alteration of T-helper lymphocytes and significant increase of CIC in blood serum (by 12.4%, p<0.001) of Ig G (by 15.7%, p<0.001) against a background of a less significant increase in Ig A (by 11.3%, p=0,01).

Patients with microbial eczema proved to have probable, compared to the control group, decrease in relative and absolute number of total T-lymphocytes (by14.3% and 20.0%, p<0.001 respectively) and its two subpopulations - T-suppressor (by 20.8%, p<0.001) and T-helper lymphocytes (by 11.4%, p<0.001). In addition, these patients had a significant increase in CIC of serum (by 9.5%, p<0.001), increase of Ig G (by 15.7%, p<0.001) and Ig A (by 13.1% , p=0.001).

A comparative analysis of systemic immunity in patients with different clinical forms of eczema detected some multidirectional changes in their cellular composition of subpopulations of T-lymphocytes, more significant reduction in the number of T-suppressor lymphocytes in patients with true eczema compared to its microbial form (by 11.7%, p=0.012; 11.7±0.522% and 13.4±0.381% respectively), while patients with microbial eczema had significantly less T-helper lymphocytes compared with those with true eczema (by 8.7%, p=0.04; 24.4±0.480% and 26.3±0.844% respectively).

The analysis of systemic immunity indices in patients with eczema, depending on the area of skin

Table

Systemic immunity indices in patients with eczema

Indices, measurement units	Control group (n=35)	Patients with eczema (n=92)	P
Leucocytes, g/l	6,33±0,208	5,70±0,099	p=0,008
Lymphocytes, %	38,1±1,501	35,0±0,704	p=0,063
Lymphocytes, g/l	2,42±0,145	1,98±0,046	p=0,004
T-lymphocytes, %	44,1±0,828	37,9±0,410	p=0,0009
T-lymphocites, g/l	0,953±0,064	0,752±0,022	p=0,003
T-helpers, %	27,3±0,488	25,0±0,431	p=0,007
T-suppressors, %	17,3±0,732	12,9±0,317	p=0,002
Immunoregulatory index	1,68±0,083	2,11±0,086	p=0,007
B-lymphocytes, %	23,8±0,841	22,2±0,262	p=0,071
B-lymphocytes, g/l	0,580±0,039	0,442±0,010	p=0,008
Ig A, g/l	1,60±0,041	1,80±0,023	p=0,004
Ig M, g/l	1,12±0,062	1,22±0,029	p=0,15
Ig G, g/l	10,2±0,269	11,8±0,184	p=0,002
Circulating immune complex, st.un.	115,4±2,402	127,4±1,962	p=0,005

lesions found, in patients with advanced skin lesions, probable reduction in the number of T-suppressor lymphocytes compared with that of patients with limited process on the skin (by 12.9%, p=0.005; 12.2±0.380% and 14.0±0.509% respectively).

Determination of systemic immunity indices in patients with eczema, based on the duration of dermatosis found, in patients with a duration of dermatosis over 3 years compared with short one (1 year), significantly lower rates of relative (by 10.6%, p=0.02; 33.0±1.01% and 36.9±1.33% respectively) and absolute number (by 19.5%, p<0.001; 1.78±0.053 g/l and 2.21±0.099 g/l respectively) of common pool of lymphocytes, the relative number of T-lymphocytes (by 8.2%, p<0.001; 35.9±0.624% and 39.1±0.669% respectively), T-suppressor subpopulation (by 20.3%, p<0.001; 11.4±0.476% and 14.3±0.499% respectively), the absolute number of B-lymphocytes (by 11.6%, p=0.024; 0.418±0.015 g/l and 0.473±0.019 g/l respectively) against a background of CIC increase (by 9.5%, p=0.012; 132.9±3.04% and 121.4±3.21% respectively).

Thus probable changes in systemic immunity indices with signs of insufficiency of cellular immunity, mainly after T-cell link. In addition, some multidirectional changes of subpopulations of T lymphocytes were found: in patients with true eczema there was a reduced number of T-suppressor lymphocytes which plays an important role in the development and course of allergic diseases, including skin, and in patients with microbial forms of dermatosis a significant reduction of T-helper lymphocytes, which are key regulators of the immune response, including a provision of anti-infectious defense, which, in particular, can explain the development and chronic course of microbial forms of eczematous process in the skin.

A probable decline in cellular link indices of systemic immunity in patients with prolonged (over three years) clinical course of dermatosis against a background of CIC that are able to detect damaging effect on the vascular endothelium, cell membranes, thereby strengthening exudative manifestations and chronic inflammatory processes in the areas of skin inflammation is a confirmation of sufficient role of immune mechanisms in the pathogenesis of eczema.

The obtained study results suggest immunodependent nature of the development of skin eczematous process and the necessity to administer a rational immunocorrective therapy for such patients.

Conclusions

1. Patients with eczema experienced significant changes in systemic immunity indexes which indicate the presence of secondary insufficiency, mainly T-cell link, with multi-directional changes in subpopulations of T- lymphocytes in patients with different clinical forms of dermatitis.

2. Some more significant changes in systemic immunity indices were established in patients with advanced eczema skin and prolonged (over 3 years) course of dermatosis that justifies advisability of adequate immunocorrective therapy for these patients.

Prospects for further research

We are going to develop and evaluate the clinical effect of the combined treatment of patients with eczema by administering immunocorrective therapy for such patients.

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ПОКАЗНИКИ СИСТЕМНОГО ІМУНІТЕТУ У ХВОРИХ НА ЕКЗЕМУ З РІЗНИМ КЛІНІЧНИМ ПЕРЕБІГОМ

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Резюме. У хворих на екзему встановлено вірогідні зміни показників системного імунітету, які свідчать про наявність імуноопосередкованих механізмів розвитку екземи переважно із залученням Т-ланки імунітету, з різноспрямованими змінами субпопуляцій Т-лімфоцитів у хворих на різні клінічні форми дерматозу. Встановлено, що більш істотні зміни показників системного імунітету реєструються у хворих на екзему з поширеним ураженням шкіри та тривалим (більше 3 років) перебігом дерматозу, що обгрунтовує доцільність призначення таким пацієнтам адекватної імунокоригуючої терапії.

Ключові слова: екзема, клінічний перебіг, системний імунітет.

ПОКАЗАТЕЛИ СИСТЕМНОГО ИММУНИТЕТА У БОЛЬНЫХ ЭКЗЕМОЙ С РАЗНЫМ КЛИНИЧЕСКИМ ТЕЧЕНИЕМ

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Резюме. У больных экземой установлены достоверные изменения показателей системного иммунитета, которые свидетельствуют о наличии иммуноопосредованных механизмов развития екземи преимущественно с вовлечением Т-звена иммунитета, с разнонаправленными изменениями субпопуляций Т-лимфоцитов у больных разными клиническими формами дерматоза. Установлено, что более существенные изменения показателей системного иммунитета регистрируются у больных экземой с распространенным поражением кожи и длительным (больше 3 лет) течением дерматоза, что обосновывает целесообразность назначения таким пациентам адекватной иммунокоррегирующей терапии.

Ключевые слова: экзема, клиническое течение, системный иммунитет.

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