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*N.A. Stepan***CONDITION OF NON-SPECIFIC RESISTENCE INDICES IN PATIENTS SUFFERING FROM ECZEMA WITH DIFFERENT CLINICAL COURSE**

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**Abstract.** An analysis of indices of nonspecific resistance of the organism in patients with eczema, depending on the nature of the clinical course of dermatosis has been carried out. We established unidirectional changes in indices of phagocytosis and complement levels in patients with eczema of different clinical course with more substantial reduction in phagocytic activity of phagocytic blood cells in

patients with microbial eczema compared with true eczema without probable differences in indices depending on the area of phagocytosis skin and the duration of the dermatosis course.

**Key words:** eczema, clinical, non-specific resistance.

**Introduction.** Eczema is common chronic dermatosis, belonging to the group of allergic diseases of the skin, which occupies from 20 % to 40 % in the structure of dermatological pathology in Ukraine [1, 2]. In recent years there has been a tendency to more severe clinical course of eczema with significant skin lesions and formation of the torpidity to the means of basic therapy with a tendency to chronic pathologic process and the development of complications, leading to a decrease or loss of long-term patient capacity, deteriorating quality of life and social activities. This defines an important medical and social significance of eczema and justifies the relevance of the research and study of pathogenetic factors of dermatosis in order to improve its treatment and prevention [2, 10, 12].

According to current research, the pathogenesis of eczema is complex and multifactorial. It is known that the development of eczema exogenous and endogenous factors, such as compromised immune and endocrine regulation disorders, the digestive system disorders, changes in the circulation, chronic foci of focal infection etc. are significant [1, 11, 13].

It was established that changes in systemic immunity [4, 5], including secondary immunodeficiency of various origins that lead to violations of cellular and humoral immunity, as well as changes in the indices of nonspecific resistance of the organism play an important role in the development and of skin diseases and their becoming chronic [7, 9], but their role in the pathogenesis of eczema can not be considered completely clear as data on indice of phagocytic activity of phagocytic blood cells and the complement system in patients with eczema are often ambiguous and contradictory. In this regard, the determination of the features of nonspecific resistance indices of the organism in patients with eczema with different clinical course in order to clarify the pathogenetic factors of dermatosis is important.

**Objective.** To identify and analyze the performance of nonspecific resistance of the organism in patients with eczema, depending on the clinical course of dermatosis.

**Material and methods.** We have examined 92 patients with eczema, including 49 men and 43 women, aged from 18 to 79.

The criteria for inclusion in the study were: presence of clinical manifestations of eczema; patient's age – 18 years old or more; absence of chronic physical illness or its relapse at the time of 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, the remaining 29 (31,5 %) patients had real (true) eczema. In 57 (62,0 %) patients with eczema, pathological process in the skin was widespread in nature, in 35 (38,0 %) it was limited. 29 (31,5 %) patients with eczema were diagnosed for the first time, it was acute or subacute, in 25 (27,2 %) of them 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 state of nonspecific resistance of the organism in patients with eczema, we determined the phagocytosis indices – phagocytic activity (PA) and phagocytic number (PN) of polymorphonuclear leukocytes characterizing the initial stages of phagocytosis, spontaneous NBT test (test of nitro blue tetrazolium recovery), which reflects the degree of functional stimulation of phagocytic cells and their ability to phagocytosis and NBT-test which was stimulated with pirogenal, characterizing the potential activity of phagocytic cells and is seen as a test of their readiness to complete phagocytosis and complement titer (by known methods) [8].

Statistical analysis of the results of research was carried out using the methods of statistical analysis [6] by means of the computer program Statistica 6.0, as the the probable difference we took the average at  $p < 0,05$ .

**Results and discussion.** In determining phagocytosis indices in 92 patients with eczema, we established their probable changes compared with those of the control group (the data are shown in the table). For example, a significant decrease in PA (by 3,7 %,  $p=0,029$ ) was found in patients with eczema, which describes the initial stages of phagocytosis, as well as a significant decrease in spontaneous NBT-test (by 11,8 %,  $p=0,014$ ) and stimulated NBT test (by

Table

Indices of nonspecific resistance in patients with eczema

Indices, measurement units	Control group n=35	Patients with eczema		
		Total number of patients, n=92	Microbial eczema, n <sub>2</sub> =63	True eczema, n <sub>1</sub> =29
Phagocytic activity (%)	70,9±1,07	68,3±0,603 p=0,029	66,9±0,638 p<0,001	69,9±1,10 p=0,53; p <sub>1-2</sub> =0,014
Phagocytic number	5,81±0,279	6,05±0,097 p=0,304	6,06±0,120 p=0,342	6,00±0,161 p=0,578; p <sub>1-2</sub> =0,774
Spontaneous NBT-test %.	22,1±0,849	19,5±0,559 p=0,014	18,4±0,601 p<0,001	21,1±1,12 p=0,472; p <sub>1-2</sub> =0,022
Stimulated NBT-test	30,0±1,11	26,1±0,676 p=0,003	25,2±0,752 p<0,001	28,4±1,27 p=0,345; p <sub>1-2</sub> =0,025
Compliment titer	0,044±0,002	0,054±0,002 p=0,005	0,055±0,003 p=0,012	0,053±0,004 p=0,038; p <sub>1-2</sub> =0,701

Notes. 1. p – degree of the significance of indices difference compared to the control group. 2. p<sub>1-2</sub> – significance of indices difference between the patients with microbial and those with true eczemas

13,9 %, p=0,003), which represent the final stage of the process of phagocytosis.

At the same time, examined patients with eczema had a significant, compared with that of control group, increase in titer of complement (by 22,7 %, p=0,005), which is involved in the implementation of immune responses, activation of phagocytosis and increases penetrability of the vascular walls, which are important pathophysiological and histopathological processes underlying the development of inflammatory manifestations in the skin of patients with eczema.

An analysis of phagocytosis indices in patients with different clinical forms of eczema showed that patients suffering from microbial eczema, there is a significant, compared to the control group, reduction in PA (by 5,6 %, p<0,05) and a significant decrease of NST-test and stimulated NBT test (by 16,7 % and 16,0 %, p<0,001 respectively) for only downward trend of these parameters in patients with true eczema compared with those of the control group.

A comparative analysis of phagocytosis in patients with different clinical forms of eczema revealed significant differences – significant decline in phagocytic activity of polymorphonuclear leukocytes (by 4,3 %, p=0,014) in patients with microbial eczema compared with those having true eczema and a significant decrease of NBT-test indices (by 12,8 %, p=0,022) and stimulated NBT test (by 11,3 %, p=0,025), characterizing the final stages of the phagocytic process without significant differences in titer of complement index.

At the same time, the comparative analysis of phagocytosis and complement indices in patients with eczema, depending on the area of skin lesions (limited or common forms of dermatosis) and the duration of dermatosis course (under 1 year, from 1 to 3 years, over 3 years) showed that there were no significant differences between the studied parameters in corresponding groups of patients.

Thus, the analysis of nonspecific resistance indices of the organism in patients with eczema, depending on the nature of the clinical course of dermatosis found unidirectional changes in rates of phagocytosis and complement levels in patients with different clinical forms of dermatosis. At the same time, we established a significant decrease of phagocytosis indices, characterizing the initial and final stages of the phagocytic process in patients with microbial eczema compared with patients who suffer from true eczema without significant differences between the studied parameters depending on the prevalence and duration of the skin disease.

The fact that it was the patients with microbial eczema who had a significant decrease in phagocytic activity of phagocytic blood cells involved in the capture and removal of microbial agents can serve as one of the key mechanisms, among other pathogenetic factors as to the development of chronic infection foci in the patient's body with subsequent formation of microbial sensitization and microbial eczema in them. At the same time, an increase of complement titer in patients with eczema, which is involved in immune mechanisms of inflammation and increases the penetration of the vascular wall, contributes to the strengthening of exudative manifestations and chronization of eczematous process in the skin of these patients.

### Conclusion

Patients with eczema had significant changes in nonspecific resistance indices, which is indicative of a significant decrease in the phagocytic activity of phagocytic blood cells in patients with microbial eczema compared with true eczema without significant differences between phagocytosis indices and complement rate, depending on the area of skin lesions and the duration of dermatosis course that should be considered when planning differentiated therapeutic tactics for these patients.

**Prospects for further research.** The prospects for further research lie in developing and evaluating the efficacy of the improved comprehensive treatment method for patients with eczema, considering the evolution of indices of their body nonspecific resistance.

#### References

1. Беляев Г.М. Современные аспекты патогенеза аллергодерматозов, лечение больных этой патологией (по данным литературы и опыту автора) / Г.М. Беляев // Дерматол. та венерол. – 2012. – № 2 (56). – С. 7-25.
2. Денисенко О.І. Алергодерматози в йододефіцитному регіоні / О.І. Денисенко. – Чернівці: БДМУ, 2010. – 156 с.
3. Дерматологія, венерологія // За ред. проф. В.І. Степаненка. – К.: КІМ, 2012. – 848 с.
4. Дранник Г.Н. Клиническая иммунология и аллергология / Г.Н. Дранник. – Киев: ООО Полиграф плюс, 2010. – 552 с.
5. Кожа как орган иммунной системы / Т.Э. Боровик, С.Г. Макарова, С.Н. Дарчия [и др.] // Педиатрия. – 2010. – Т. 89, № 2. – С. 132-137.
6. Лапач С.Н. Основные принципы применения статистических методов в клинических испытаниях / С.Н. Лапач, А.В. Чубенко, П.Н. Бабич. – К.: Морион, 2002. – 160 с.
7. Левицька С.А. Чинники і механізми неспецифічної резистентності у дітей, що часто і тривало хворіють / С.А. Левицька // Клін. та експерим. патол. – 2014. – Т. XIII, № 2 (48). – С. 91-93.
8. Посібник з лабораторної імунології / Л.Є. Лаповець, Б.Д. Луцик, Г.Б. Лебедь [та ін.]. – Львів, 2008. – 268 с.
9. An open-label assessing the safety and efficacy of alitretinoin in patients with severe chronic hand eczema unresponsive to topical corticosteroids / T. Dirschka, K. Reich, R. Bissonnette [et al.] // Clinical and Experimental Dermatology. – 2011. – Vol. 36, № 2. – P. 149-154.
10. Charles J. Eczema / J. Charles, Y. Pan, G. Miller // Aust. Fam. Physic. – 2011. – Vol. 40, № 7. – С. 467.
11. Everyday clinical experience of alitretinoin in the treatment of severe chronic hand eczema: seven case studies / J. English, R. Graham-Brown, A. de Sica Chapman [et al.] // Clin. and Experim. Dermatol. – 2011. – Vol. 36, № 1. – P. 1-2.
12. Hon Kam Lun E. Concerning heavy metals in childhood eczema / Kam Lun E. Hon // Pediatric Allergy and Immunology. – 2011. – Vol. 22, № 3. – P. 343.
13. Mollerup A. Chonic hand eczema – self- management and prognosis: a study protocol for a randomized clinical trial / A. Mollerup, N.K. Veien, D. Johansen // BMC Dermatol. – 2012. – Vol. 12, № 6. – P. 2-9.

### СОСТОЯНИЕ ПОКАЗАТЕЛЕЙ НЕСПЕЦИФИЧЕСКОЙ РЕЗИСТЕНТНОСТИ У БОЛЬНЫХ ЭКЗЕМОЙ С РАЗНЫМ КЛИНИЧЕСКИМ ТЕЧЕНИЕМ

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**Резюме.** Проведен анализ показателей неспецифической резистентности организма у больных экземой в зависимости от характера клинического течения дерматоза. Установлены однонаправленные изменения показателей фагоцитоза и уровня комплемента у больных экземой с различным ее клиническим течением при наличии более существенного уменьшения фагоцитарной активности фагоцитирующих клеток крови у больных микробной экземой по сравнению с истинной экземой без достоверных отличий показателей фагоцитоза в зависимости от площади поражения кожи и длительности течения дерматоза.

**Ключевые слова:** экзема, клиническое течение, неспецифическая резистентность.

### СТАН ПОКАЗНИКІВ НЕСПЕЦИФІЧНОЇ РЕЗИСТЕНТНОСТІ У ХВОРИХ НА ЕКЗЕМУ З РІЗНИМ КЛІНІЧНИМ ПЕРЕБІГОМ

*Н.А. Степан*

**Резюме.** Проведено аналіз показників неспецифічної резистентності організму у хворих на екзему залежно від характеру клінічного перебігу дерматозу. Встановлено односпрямовані зміни показників фагоцитозу та рівня комплементу у хворих на екзему з різним її клінічним перебігом за наявності більш істотного зменшення фагоцитарної активності фагоцитувальних клітин крові у хворих на микробні форми екземи порівняно з істинною екземою без вірогідних відмінностей показників фагоцитозу залежно від площі ураження шкіри та тривалості перебігу дерматозу.

**Ключові слова:** екзема, клінічний перебіг, неспецифічна резистентність.

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