

EVALUATION OF SKIN MICROFLORA IN PEOPLE WHO HAVE BEEN IN EXTREME CONDITIONS

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The state of the surface and deep microflora of the skin was studied in 48 patients of different departments, on the day of their admission and discharge. Quantitative changes in the autoflora are revealed, depending on the type of department and the number of days spent in the hospital.

Keywords: Microbiology, superficial and deep skin microflora, microbiocenosis, immunological reactivity

Relevance. The influence of adverse factors of the external environment, in particular extreme conditions associated with professional activity, leads to significant physical and psychological stress, what is stress to the body. The close relationship of the nervous, endocrine, and immune systems provides a single body control system, its protection against multiple external impacts [3,4]. Disorder of the nervous regulation and immune suppression, usually accompanied by a change in the qualitative and quantitative composition of the normal microflora of the human body as the factor of nonspecific resistance of the organism. In the recent past, the study of the skin microflora is widely used to assess immunological reactivity of the human organism to various adverse conditions [1], but at present, the application of the method is somewhat limited, despite its informativity and availability.

Purpose. To examine the state of the microflora of the skin of the people who were in extreme conditions.

Materials and methods of research

Evaluation of superficial and deep skin autoflora was conducted on 48 patients who were hospitalized in neurology departments 14 people, therapy departments – 14 people, palliative care and trauma departments – 10 persons. Material sampling for the study was conducted on the day of admission of patients and after the course of treatment, on the day of discharge. The average age of the surveyed, including 45.8% of men, 54.2% of women, was 64.9 years.

Static processing of results of research carried out using the program Statistica 10.0 software. The average arithmetic and mean-square deviations of the studied variables and non-sampling errors were calculated. Normal distribution of the obtained data were presented as $M \pm m$, where M is the arithmetic mean of the studied variables, m is the non-sampling error. The difference of indicators in the group with

normal values was estimated with Student's t-test. Statistically significant differences were considered when $p \leq 0.05$.

Results of research and their discussion

It was established that in day of hospitalization of patients exposed to extreme conditions during the various periods of their lives, the content of the microflora on the skin surface and deep layers was in the average 22.7 ± 1.4 and 79.9 ± 4.3 respectively of all surveyed. Due to performed treatment their contents adequately decreased in 2.4 times in patients of neurology department, but in patients of the therapeutic department decreased in 3.6 times ($p \leq 0.05$). On the day of discharge. When comparing the content of superficial and deep microflora in women and men, no significant differences were detected ($p \geq 0.5$).

When comparing the average content of surface microflora in patients of different departments (Table 1) it was found out that was not significant difference from the average, herewith their content in patients of neurological department was in 2,3 times more than in patients of traumatology department, which may be due to severe psycho-emotional state, with appropriate pathology. The same tendency was noted in the content of deep autoflora.

The comparison of the content of superficial and deep microflora with the average data obtained in healthy individuals [2,5] showed that in average their number is above normal in 1.3-2.2 and the 3.4-4.7 times, respectively. More significant differences were found in patients of neurology department surface 1.8-3.0 times and the content of deep microflora was above normal in 5.1-6.5 times. On the day of discharge surface of the skin microflora in patients of the neurological department corresponded to generally accepted norm, the concentrations of the deep autoflora exceeded the normal figures in 2.1-2.9 times. The validity of the results ($p \leq 0.05$) may indicate the effectiveness of treatment.

Table 1

Skin microflora of patients of the hospital who were treated in different departments

Departments	Skin microflora (M ± m)	
	superficial	deep
Patients on the day of admission to hospital		
Neurology	30,4 ± 2,7	118,2 ± 9,1
Therapy	28,1 ± 2,3	70,7 ± 1,9
Palliative care	19,1 ± 1,7	71,2 ± 3,6
Traumatology	13,2 ± 0,9	59,8 ± 2,9
Common value	22,7 ± 1,4	79,9 ± 4,3
Patients on the day of discharge		
Neurology	12,7 ± 1,4	49,0 ± 1,8
Therapy	7,7 ± 0,5	36,5 ± 2,9
Common value	10,2 ± 1,1	42,7 ± 2,8

Table 2

Comparative characteristics of the microflora content of the skin of people who were in extreme conditions

Department	Microflora indices superficial / deep						
	mean value	minimum	maximum	standard deviation ^a	standard error of standard deviation ^a	Significance (2-sided) ^a	Student's t-test ^a
Patients on the day of admission to hospital							
Neurology	30,4/118,2	18,0/83,0	47,0/153,0	8,6/28,8	2,7/9,1	,000/0,000	7,4/11,1
Therapy	28,1/70,7	20,0/60,0	41,0/79,0	7,5/6,0	2,3/1,8	,000/0,000	7,5/28,3
Palliative care	19,1/71,2	11,0/55,0	29,0/93,0	5,5/11,3	1,7/3,6	,001/0,000	5,1/15,0
Traumatology	13,2/59,8	10,0/50,0	19,0/81,0	3,1/9,2	0,9/2,9	,011/0,000	3,2/14,6
Common value	22,7/79,9	10,0/50,0	47,0/153,0	9,4/27,7	1,4/4,3	,000/0,000	8,4/14,3
Patients on the day of discharge							
Neurology	12,7/49,0	10,0/44,0	16,0/53,0	2,7/3,7	1,3/1,8	,140/0,000	1,9/17,1
Therapy	7,7/36,5	7,0/32,0	9,0/45,0	0,9/5,9	0,4/2,9	,018/0,007	-4,7/6,5
Common value	10,2/42,7	7,0/32,0	16,0/53,0	3,2/8,1	1,1/2,8	,836/0,000	0,2/8,9

Note. ^a – test. Value. = 10 / test. Value. = 17.

Table 2 presents a comparative analysis of the results of the study with normal microflora of the skin of a healthy person using a Student's t-test, which also confirms the results of nonparametric analysis.

Conclusion

Qualitative and quantitative content of microflora of the skin is an informative indicator for the evaluation of immunological reactivity of the human organism to adverse factors of environment.

More pronounced changes in the content of superficial and deep microflora were revealed at patients of the neurology Department compared to the average performance of all patients and generally accepted performance standards.

As a result of the treatment of patients of neurological and medical departments, it was noted the normalization of the content of superficial and deep microflora of the examined patients.

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