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THE FAR EASTERN PHYTOMINERAL PREPARATION AND THYMODEPRESSINE IN REHABILITATION OF CHILDREN WITH ATOPIC DERMATITIS

ABSTRACT

Social importance of rehabilitation of the children with atopic dermatitis is undoubted. Objective: the efficacy of corneotherapy from far eastern phytomineral preparations and thymodepressine in patients rehabilitation.

Materials and methods. In the remission period 75 (the basic group) patients had baths with torphopeloid extract, emollient with bentonites and thymodepressine nasally. In 21 patients (the comparison group) indifferent ointments were used. Blood serum cytokines, corneometry, tewametry, sebumetry have been investigated.

Results. In basic group not a single case of atopic dermatitis severe exacerbation during a year has been marked. The first relapses is mitigate form have been noted in 9-10 months. The positive dynamics of cytokine pattern and skin functional indices have been preserved. In the comparison group recurrences were noted in 76,1% patients. The studied indices weren't being changed or had the negative tendency.

Conclusion. Corneotherapy with far eastern phytomineral preparation and thymodepressine are effective in rehabilitation of patients with atopic dermatitis.

Keywords: atopic dermatitis, rehabilitation, torphopeloids, bentonites, thymodepressine, cytokines, corneometry, tewametry, sebumetry.

INTRODUCTION

Standardization of medical service parameters is the main way of quality increase and equal chances to get qualified medical aid [8]. Standards have to be mobile enough, based on the latest research achievements and minimize limitations in doctor actions about individual approach to the patient [4]. Respond to high ranks of evident medicine, to be cooperative, i.e. compliant and cause patient's satisfaction by effective doctor's actions [5]. Creation on their basis regional protocols of patient's management taking into account special features of local pathology and possibility of material base are actual and economically substantiated.

Social and medical significance of atopic dermatitis problem is undoubted. Statistic data show that 10-30% of children and 2 – 10% of adult population suffer from this disease with the annual increase of it. The state aggravates the possibility of "atopic march" in 30-60% patients at the age up to 3 years with the involvement of different organs and systems (rhinitis, eyes affect, bronchial asthma). Patients with atopic dermatitis often have diseases of non-allergic nature of gastrointestinal tract, liver and all kinds of infections [2, 3, 14]. Atopic dermatitis renders severe psychological action on patients, his family and everything around him, brings down the life quality. Social and economic burden is significant [6, 16].

The problem of atopic dermatitis has interdisciplinary character, actual

for doctors of different specialties (dermatologists, allergologists, pediatricians, therapists) and workers of social sphere.

According to contemporary idea the fundamentals of atopic dermatitis pathogenesis have the genetically determined disturbances of the skin barrier function, innate and adaptive immunity. Corneocytes and water-lipid mantle ("bricks" and "cement") form barrier function of epidermis. In atopic dermatitis structural disturbances of the stratum corneum is characterized by phospholipid deficit (mainly ceramids), fatty acid (in particular unsaturated ones). The increased transepidermal water loss leads to xerosis and reactive keratosis. Xerosis and keratosis provoke itching and scratching. The throw out of inflammatory mediators is activated and further epidermis damage is potentiated [12, 13]. Deviations Th1/Th2 of immune reactions (biphasic T-cell polarization) and increase of IgE expression have the important meaning.

Changes in cytokine pattern in combination with pleomorphism and polytropism of cytokines also play an essential role in supporting of chronic immune inflammation. The condition of chronic immune inflammation may not have a clear clinical picture that is characteristic for the phase of remission – subclinical immune inflammation. The influence of various triggers (chemical, allergic, infectious), stresses will contribute to relapse of atopic dermatitis [12, 17]. Contemporary corneotherapy by A. Kligman is just directed to the protection

and rehabilitation of the stratum corneum, prevention of the pathologic processes due to its destruction. Corneotherapy principles have got an appreciation in the programmes on the atopic skin care "Aven", "Atoderm", "Lipicar", "A-derma" [1, 7, 9, 10].

In the programmes the important place has organic and nonorganic silicon combinations, taking part in the construction and functioning of the epidermis, connective tissues and membrane structures, promoting skin hydration, having anti-inflammatory similar to steroids action. Plant components with high content of unsaturated fatty acids, triglycerids, phytosterols are used to fulfill skin lipids. However, for all evident merits, the programmes don't enough take into account skin microbiome. Immune corrective measures are not regarded. And these programmes are expensive enough.

Our rehabilitation programme includes Thymodepressine nasally, baths with the Far Eastern torphopeloid extract and emollient on the basis of bentonites and silicone water of the "Kuldur" spring. The composition of torphopeloid extract includes: silicon, humine combinations, lipids, phytosterols, ferments, polyphenols, triterpens providing anti-inflammatory and antiseptic qualities. Free organic acids create hydrotropic effect. Lipids and phytosterols reconstitute skin lipids. Bentonites are natural organic and nonorganic silicone compositions. Thymodepressine is a domestic preparation with marked

immunomodulating action.

MATERIALS AND METHODS

96 patients with atopic dermatitis at the age of 10-16 years in the remission stage have been under control during a year. The diagnosis of atopic dermatitis was made according «Millenium Criteria» for the diagnosis of atopic dermatitis of European Handbook of Dermatological Treatments [11]. Patients have been divided into 2 groups. 75 patients had the suggested corneotherapeutical measures (the basic group). Methodics. Thymodepressine-spray 1 dose (0.25mg) intranasally 1 time in 2 weeks. Total baths with torphopeloid extract (patent RF №240753562 from 20.05.2010) regularly in 2-3 days. Emollient on the basis of the Far Eastern bentonites and silicon water of the «Kuldur» spring have been put daily (patent RF №2230549 from 20.06.2004). 21 patients didn't have such measures (the comparative group). Routine creams (Unna cream) have been used as emollient.

Microbiologic investigations have been done with scrape microscopy and microbiological culture according to the Order Ministry of Healthcare USSR №535 from 22.04/1985 "About unification of microbiological (bacteriological) methods of investigation". The skin barrier function has been studied on the hydration level of the stratum corneum (corneometry), transepidermal water loss (TEWL), the content of the cutaneous sebum secretion (sebumetry) on the apparatus MPA – 5 (Courage – Khazaka electronic GmbH FRG). Cytokines have been determined with hard phase IFA with diagnostic sets "Vector – Best" (Novosibirsk). Clinical evaluation has been added by the index of dermatologic quality life (DIQL). Statistic material processing has been made with the help of Statistica programmes Version 7. There have been calculated middle arhythmic (M) and standard error of middle arhythmic (m). Selection comparison on Student coefficient. Statistical verification in $p < 0,05$.

RESULTS AND DISCUSSION

Complex rehabilitation measures have produced a favourable action on the patients of the basic group. There was not a single case of serious exacerbation during a year. The first relapses have been marked in 9-10 months in 21 (35,7%) out of 75 patients. Relapses were in a mitigent form and rapidly arrested with antihistamine preparations and tacrolimus. In the comparative group relapses were marked in 16 (76,1%) out of 21 patients. The first relapses have been just on the 4-5 month, intensity

of exacerbation in 4 patients have required hospitalization. In the basic group rehabilitation measures have been accompanied by the tendency to normalization of the functional skin parameters. Thus, hydration of stratum corneum has been increased from $29,5 \pm 2,1$ un. up to $36,4 \pm 2,2$ un. (control $42,8 \pm 2,7$ un.). In the comparative group this index was $25,4 \pm 2,3$ un. TEWL in the basic group lowered from $21,1 \pm 1,8$ g/m².hr. to $15,2 \pm 1,4$ g/m².hr. (control $11,7 \pm 1,2$ g/m².hr.). In the comparative group TEWL was $18,9 \pm 1,2$ g/m².hr. Sebumetry index in the basic group has been improved from $86,4 \pm 3,1$ mkg/cm² up to $94,3 \pm 3,2$ mkg/cm² (control $118,4 \pm 4,3$ mkg/cm²). In the comparative group sebumetry index has been a few lowered- $78,5 \pm 4,2$ mkg/cm².

From the starting point *S. aureus* was found in 77,3% ($198,7 \pm 34,6$ CFU/cm²) patients. Resistancy to antibiotics: penicilline, tetracycline, erythromycine, laevomycetine is a typical feature. Polyresistancy is marked in 42% patients. *Candida* spp. are selected in 32,6% patients. By the end of observation in the basic group *S. aureus* is found in 47,5% ($87,5 \pm 13,6$ CFU/cm²) patient. *Candida*

spp. are stated in 17,6% patients of the base group. In the comparative group the studied indices are not practically changed and have inclination to negative tendency.

From the starting points in the phase of remission in patients with atopic dermatitis the level of the studied cytokines in the blood serum has been in the control limits of healthy persons. Rehabilitation measures in the basic group have contributed to maintenance of cytokine content in the limits of normal value. Stability of cytokine pattern testifies to positive tendency of immunology tolerance formation. In patients of the comparative group this tendency has been not practically marked. By the completion of observation there has been stated the increase of concentration of IL-1 β , IL-2, IL-5, IL-6, IL-10, IL-12, IL-17, and TNF α on decreasing IFN γ . It indicates the starting progress biphasic T-cell polarization, characteristic for the patients with atopic dermatitis. However the level of certain cytokines doesn't fully meet paradigm of reciprocal Th1/Th2 relations. Possibly it is associated with genetic polymorphism of cytokines and their pleiotropism, when the functions of

Cytokine content in blood serum in patients with atopic dermatitis in the remission phase

Cytokines	Group of patients Basic n = 75 Comparative n = 21	Cytokines pg/ml		
		Patients		Control group n = 21
		Primary	Secondary	
IL - 1 β	Basic	3,9 $\pm$ 0,4	4,1 $\pm$ 0,3	2,9 $\pm$ 0,5
	Comparative	-/-	5,4 $\pm$ 0,6*	
IL - 2	Basic	19,3 $\pm$ 1,9	20,1 $\pm$ 1,1	17,2 $\pm$ 1,4
	Comparative	-/-	22,4 $\pm$ 2,1*	
IL - 4	Basic	16,2 $\pm$ 1,1	17,1 $\pm$ 1,2	14,1 $\pm$ 1,6
	Comparative	-/-	17,9 $\pm$ 1,4	
IL - 5	Basic	7,1 $\pm$ 0,6*	8,2 $\pm$ 0,5	6,0 $\pm$ 0,5
	Comparative	-/-	9,9 $\pm$ 0,7*	
IL - 6	Basic	4,1 $\pm$ 0,4	4,7 $\pm$ 0,4	2,3 $\pm$ 0,5
	Comparative	-/-	5,3 $\pm$ 0,5*	
IL - 8	Basic	40,6 $\pm$ 2,4	42,1 $\pm$ 2,3	38,4 $\pm$ 2,7
	Comparative	-/-	56,4 $\pm$ 3,8*	
IL - 10	Basic	5,3 $\pm$ 0,5	5,9 $\pm$ 0,4	4,8 $\pm$ 0,4
	Comparative	-/-	7,6 $\pm$ 0,5*	
IL - 11	Basic	13,8 $\pm$ 0,8	14,2 $\pm$ 0,7	12,7 $\pm$ 0,9
	Comparative	-/-	15,1 $\pm$ 0,6	
IL - 12	Basic	4,5 $\pm$ 0,5*	4,9 $\pm$ 0,4	3,6 $\pm$ 0,4
	Comparative	-/-	6,3 $\pm$ 0,6*	
IL - 13	Basic	14,3 $\pm$ 1,1	15,4 $\pm$ 0,9	12,9 $\pm$ 1,2
	Comparative	-/-	16,2 $\pm$ 1,3*	
IL - 17	Basic	7,4 $\pm$ 0,5	8,3 $\pm$ 0,7	6,8 $\pm$ 0,8
	Comparative	-/-	10,9 $\pm$ 0,8*	
IL - 18	Basic	16,7 $\pm$ 1,2	17,4 $\pm$ 1,3	15,9 $\pm$ 1,3
	Comparative	-/-	18,1 $\pm$ 1,1	
FNO α	Basic	10,5 $\pm$ 0,9	11,4 $\pm$ 1,0	9,1 $\pm$ 0,8
	Comparative	-/-	14,8 $\pm$ 1,1*	
IFN γ	Basic	8,7 $\pm$ 0,7*	7,7 $\pm$ 0,5	8,1 $\pm$ 0,2
	Comparative	-/-	5,1 $\pm$ 0,3*	

Note: distinction with control is reliable, $p < 0,05$; control group-healthy children aged 10-16 years.

one (repressed) cytokines fulfill others [12, 14]

The fullness of remission has been evaluated on the questionnaire of the dermatologic index of the life quality (DIQL). The patient's life quality of the basic group, who got rehabilitation measures complex, has been better, than in the comparative one. Medistatistical DIQL in the base group has been $7,4 \pm 0,5$; in the comparative – $15,3 \pm 0,8$. The starting index was $27,2 \pm 0,9$.

CONCLUSION

Thus, the obtained results testify the effectiveness of rehabilitation measures with the use of corneotherapy as baths and emolient from the Far Eastern phytomineral materials and Thymodepressine intranasally in patient with atopic dermatitis in the remission period. The method widens the control zone for the minimal persistent immune inflammation, prevents the skin inflammatory modulating and contributes to the tendency of immunologic tolerance forming. The reserves of ecologically clean phytomineral materials in the Far Eastern Federal Region great. Farmacoeconomic effect is evident and essential.

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