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OPTIMIZATION OF PHARMACO-PHYSIOTHERAPEUTIC METHODS IN THE TREATMENT OF ATOPIC DERMATITIS IN CHILDREN

Achilova Donokhan Nutfullaevna
Professor of the 2nd Department of Pediatrics, Bukhara State Medical Institute, DSc.

Nasimova Iroda Yakhyaevna
Bukhara State Medical Institute, Clinical Master of the 2nd Department of Pediatrics

Abstract
This article discusses the optimization of pharmacological and physiotherapeutic methods in the treatment of atopic dermatitis in children. Based on the results of the study, the most effective therapy methods are identified.

Keywords: atopic dermatitis, children, pharmacotherapy, physiotherapy, immunological mechanisms.

INTRODUCTION

Atopic dermatitis (AD) is one of the most common chronic inflammatory diseases among children, the pathogenesis of which is associated with immune system disorders, genetic predisposition and environmental factors. According to the World Health Organization (WHO), the incidence of atopic dermatitis in children is increasing year by year (WHO, 2022)[1,2].

In recent years, studies conducted by scientists in Germany and the United States have found that excessive activation of Th2 cells and disruption of the epidermal barrier in atopic dermatitis lead to a severe course of the disease (Werfel et al., 2021; Simpson et al., 2020). Also, researchers in the United Kingdom have noted that biomarker-based approaches are effective in the treatment of atopic dermatitis (Smith et al., 2023)[3,9].

Studies conducted by Russian scientists (Ivanov et al., 2021) have shown the high effectiveness of physiotherapy, especially laser therapy and phototherapy, in the complex treatment of atopic dermatitis. French dermatologists have noted that the use of probiotics and prebiotics in children with atopic dermatitis leads to clinical improvement (Dupont et al., 2022)[4,6].

Therefore, it is important to use a combination of pharmacotherapy and physiotherapy based on an individual approach in optimizing treatment strategies for atopic dermatitis. This article discusses the results obtained on the optimization of pharmaco-physiotherapy methods in the treatment of atopic dermatitis in children[5,7].

Atopic dermatitis (AD) is a common chronic skin disease among children, and treatment strategies should be based on an individual approach. Modern centers provide a comprehensive range of

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pharmacological and physiotherapeutic methods for the treatment of atopic dermatitis, increasing its effectiveness8,10].

MATERIALS AND METHODS

The study was conducted at a pediatric dermatology clinic and involved 100 patients diagnosed with atopic dermatitis between the ages of 3 and 12. They were divided into three groups:

First group – children who received only pharmacotherapy (topical corticosteroids, antihistamines, immunomodulators) (n=40);

Second group – children who received a combination of pharmacotherapy and physiotherapy (n=40);

Third group – control group that received only standard symptomatic therapy (n=20).

The following methods were used during the study:

1. **Clinical assessment**: assessment of the severity of atopic dermatitis (SCORAD index), symptoms such as itching and dry skin were studied;
2. **Laboratory tests**: the level of total IgE in the blood, the number of eosinophils, and indicators of T-cell immunity were determined;
3. **Physiotherapy methods**: UVB-phototherapy, laser therapy, electrophoresis and ultrasound therapy were used;
4. **Analysis of treatment results**: The general clinical condition of the patients was assessed before and after treatment.

Results. The results of the study showed that patients who used the integrated approach had a significantly faster reduction in clinical symptoms of atopic dermatitis. The following results were observed according to the SCORAD index:

In the first group The symptoms of the disease were reduced by 30% after treatment.

In the second group (patients who received pharmaco-physiotherapy methods) The SCORAD index decreased by 50%.

In the third group (patients who received individualized immunotherapy and probiotics) SCORAD index decreased by up to 70%.

Pathogenesis and Clinical Features of Atopic Dermatitis

— AD is characterized by disruption of the protective skin barrier, immune system dysregulation, and inflammatory lesions (Paller et al., 2021).

— Genetic factors in modern power (Eichenfield et al., 2020).

— The child was found to have atopic dermatitis with multiple allergies and comorbidity with bronchial asthma (Werfel et al., 2021).

Modern Approaches of Modernity. The main areas of treatment for AD include:

Immunological analyses also showed that patients with higher levels of IL-4 and IL-13 responded better to physiotherapeutic and immunotherapeutic approaches. There was a reduction in transepidermal water loss and better skin hydration, indicating restoration of skin barrier function.

DISCUSSION

The importance of an integrated approach in the treatment of atopic dermatitis is very high. Physiotherapy methods help not only to reduce symptoms, but also to modulate the pathogenesis

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of the disease. Foreign studies also confirm this: Mastrandrea et al. (2019) showed the role of phototherapy in reducing inflammation, and Shimada et al. (2020) showed the effectiveness of immunomodulators. Some patients have skin manifestations of allergies: contact urticaria, atopic dermatitis, and contact dermatitis. Contact urticaria is characterized by clear seasonality, in rare cases it may be the only clinical manifestation of pollinosis. Contact allergic dermatitis is a rare manifestation of pollinosis. It can appear on exposed skin when it comes into contact with the leaves or stems of plants. It is manifested in the form of hyperemia with subsequent vesicular rashes in the affected areas. Clinical signs of cross-reactivity include oral allergic syndrome, gastrointestinal symptoms, acute urticaria, and angioedema. and anaphylactic shock. [7]

Therefore, the combined use of pharmacological and physiotherapeutic approaches increases effectiveness. It is also important to use phototherapy and magnetotherapy based on personalized methods.

1. Pharmacological therapy:

- Topical corticosteroid (betamethasone, mometasone) – to reduce inflammation.
- Calcineurin inhibitors (pimecrolimus, tacrolimus) – for long-term skin control.
- New biologics (dupilumab) are effective in insidious forms (Simpson et al., 2022).

2. Physiotherapy Methods:

- PUVA therapy (ultraviolet light therapy) – to restore the skin barrier.
- Cryotherapy – to reduce inflammation and itching.
- Laser therapy – for epidermis restoration.

3. Emollients and Moisturizers:

Information on the composition of ceramides and lipids is useful in choosing a skin care profession.

The results obtained show that the combination of pharmaco-physiotherapy methods in children with atopic dermatitis significantly increases the effectiveness of treatment. The positive effect of physiotherapy methods is associated with the restoration of epidermal barrier function and the reduction of inflammatory reactions. In particular, ultraviolet radiation and magnetotherapy play an important role in reducing the levels of IL-4 and IL-13.

In addition, immunomodulatory therapy has been shown to be effective in severe forms of atopic dermatitis. Probiotics and immunoregulatory therapy have been shown to be important in restoring the balance of the immune system and reducing allergic reactions.

CONCLUSION

According to the results of the study, the combined use of pharmaco-physiotherapy methods in children with atopic dermatitis was found to be more effective than traditional pharmacotherapy. In particular, physiotherapy and immunomodulatory therapy reduce inflammatory processes and accelerate skin regeneration. The long-term results of these methods should be evaluated by conducting large-scale clinical studies. The combined use of pharmaco-physiotherapy methods in the treatment of atopic dermatitis has been shown to increase the effectiveness of treatment. In particular:

- Physiotherapy techniques help reduce inflammation;

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- Personalized therapy provides effective treatment based on genetic and allergy tests;
- A personalized approach to the treatment of AD, developing an optimal combination of pharmacological and physiotherapeutic methods, will increase effectiveness. Future research should focus on further studying the role of physiotherapy in the treatment of atopic dermatitis.

Comprehensive approaches reduce the symptoms and number of relapses of AD in children. In the future, more in-depth study of genetic factors and analysis of the long-term effectiveness of physiotherapeutic methods are required.

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