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OPTIMIZATION OF THERAPY FOR ATOPIC DERMATITIS IN YOUNG CHILDREN

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Abstract
Atopic dermatitis in children is characterized by staged development, polymorphism of clinical manifestations and persistent recurrent course.
One of the main tasks of treating atopic dermatitis is to prevent relapses of the disease, which is achieved by complex external proactive therapy.

Keywords: children, dermatitis, filaggrin, filagrinol, hydration.

Introduction

Atopic dermatitis (AD) is a genetically determined disease and depends on the degree of disruption of the epidermal barrier and dysfunction of the immune response [1,4].
Despite the fact that immunological disorders of the Th2 type usually predominate in this disease, endotypes of inflammation with the participation of other important cytokines (TSLP, IL33, Th17, etc.) have been described [2,3].
The situation is similar with barrier disorders: despite the fact that many disorders of the synthesis of lipids, ceramides, loricrin have been described, filaggrin is the most studied.
The properties of a child's skin differ significantly from those of an adult. It is more permeable and can be exposed to adverse environmental factors.
Atopic dermatitis in early childhood is much more common than in adults. Genetically determined defects in the synthesis of the filaggrin protein, which ensures the normal functioning of the epidermal barrier, are observed in 10% of Europeans.
Filaggrin is involved in the formation of the outer layer of the skin, and disturbances in its structure are associated with the severity of atopic dermatitis and its form [5,9].
These data do not include non-zero mutations (more than 40 have been described) and protein dysfunction.
Probably, the role of filaggrin is much broader, since there is data on the association of this protein deficiency with bronchial asthma and the atopic march.
When taking into account several mutations, up to 50% of patients have different dysfunctions of filaggrin [].
Estimating the number of mutations and disturbances of filaggrin in the skin is all the more difficult since they can be local in nature.

Filaggrin is the main structural component responsible for saturation and retention of moisture in the skin, it ensures structuring of the cytoskeleton of horny cells and stimulation of the production of epidermal lipids.

With a filaggrin deficiency in the epidermis, a decrease in the density of corneodesmosomes and an inferiority of the structure of the horny "envelopes" is observed, and the products of its degradation participate in the formation of a natural moisturizing factor.

The final products of the metabolism of this protein help maintain the pH on the skin surface within the physiological norm [5,9,12].

In a complex of therapeutic measures for a defective skin barrier, the use of moisturizing cosmetics is a basic measure and is mandatory at all stages of therapy [10].

Emollients themselves can reduce inflammation and the severity of the patient's condition with AD.

In addition, their use reduces the frequency and amount of anti-inflammatory drugs needed in the treatment of AD.

Emollients can be the main cosmetic treatment for children with mild AD and part of the treatment for moderate and severe forms of AD [11].

The Aim of the Study

To evaluate the possibility of using a cream with 5% filagrinol (Admera) in children (0-18 years) as an emollient for atopic dermatitis (AD) and to obtain instrumental data on skin hydration.

Materials and Methods

An open interventional study in parallel groups was conducted.

The study included children aged 0-18 years with atopic dermatitis in the acute stage. The duration of the study was 14 days.

All participants underwent a clinical examination, an assessment of the severity of atopic dermatitis, after which they were randomly divided into 2 groups: the first received a topical glucocorticosteroid (TGCS) (methylprednisolone aceponate) on rashes once a day + cream with 5% filagrinol on skin areas without rashes 2 times a day;

the second group - the same treatment + additionally, from the 5th day, a cream with 5% filagrinol to the sites of rashes in addition to topical corticosteroids.

Parents were advised to apply the emollient 30-60 minutes after the corticosteroid to the skin in the evening and without the steroid in the morning.

The rules for applying the emollient, its frequency, were explained to patients and (or) their parents, after which patients under 9 years old received 300 ml of cream for 14 days, and older patients 450 ml of cream.

An open interventional study in parallel groups of children with AD 0-18 years old. 2 equal groups: 1 - I received methylprednisolone cream 1 time per day to the lesions for 14 days + emollient "Admera" to the rest of the skin; 2nd group - similar treatment + cream with 5% filagrinol was applied to the lesions starting from the 5th day.

Results

Standard therapy with topical glucocorticosteroid in combination with emollient was effective. Severity indices significantly decreased during steroid + emollient treatment: EASI 11.5 vs 2 points, $p < 0.001$; skin lesion area from 17.5% [10.0; 26.8%] to 3.5% [1.25; 6.0%], $p < 0.001$; IGA assessment 2 vs 1, $p < 0.01$.

The assessment of general itching in AD (max 10) became significantly lower during therapy: night itching decreased from 3 to 1 and daytime itching from 4 to 2.5 points, $p < 0.01$.

The average use of instrumentally measured skin hydration outside the lesions initially amounted to 8 U. After 14 days of using the emollient, the moisture content of dry, clean skin increased to 10 U ($p = 0.017$).

Skin moisture content in the affected areas increased significantly from 8 to 12.0 U ($p = 0.001$).

The organoleptic assessment of the cream by patients was 4.48 points (max 5).

During this study, no cases of adverse events (AE) that met the criteria for a serious or moderate reaction were registered. 11.3% of patients noted manifestations of skin itching, which quickly subsided without treatment.

Conclusion. Cream with 5% filagrinol (Admera) significantly increases skin moisture content, measured instrumentally in the area of rashes and dry skin without dermatitis.

The cream does not cause significant adverse reactions and can be used in combination with topical steroids.

Emollients play an important role in the treatment of atopic dermatitis. They reduce the severity of itching and dry skin, and steroids relieve inflammation in the affected areas.

Using a cream with 5% filagrinol (Admera) together with methylprednisolone aceponate cream for 2 weeks allows for significant regression of rashes,

The cream can be recommended for use in children aged 0–18 years with dry and atopic skin, including patients with proven allergic sensitization, to moisturize dry skin in areas outside the rash and in combination with a topical glucocorticosteroid from the 5th day of the disease after the acute phase of inflammation has been relieved.

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