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Analysis of the Therapeutic Efficacy of Mucopolysaccharide Polysulfate Cream Combined with Desonide Cream in the Treatment of Chronic Eczema

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Abstract: *Objective:* This paper aims to analyze the therapeutic efficacy of mucopolysaccharide polysulfate cream combined with desonide cream in the treatment of chronic eczema. *Methods:* A sample of 70 patients with chronic eczema admitted from April 2022 to April 2023 were randomly divided into groups. Mucopolysaccharide polysulfate cream combined with desonide cream was applied in group A, and desonide cream was used in group B. The treatment efficacy was analyzed in both groups. *Results:* The curative effect on chronic eczema in group A was better than that in group B, $P < 0.05$. The target skin lesion area of group A was smaller than that of group B, and the skin lesion area score was lower than that of group B, $P < 0.05$. The skin lesion-symptom score of group A was lower than that of group B, $P < 0.05$. The treatment satisfaction of group A was higher than that of group B, $P < 0.05$. *Conclusion:* Patients with chronic eczema treated with mucopolysaccharide polysulfate cream combined with desonide cream can promote the regression of skin lesions and enhance the therapeutic efficacy.

Keywords: Chronic rash; Desonide cream; Polyiodic acid polysaccharide cream

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1. Introduction

Eczema is common among skin diseases, which is related to infection and inflammation of the epidermis and dermis. It is characterized by itching and symmetry, with a high recurrence rate. After the acute onset of eczema, if the diagnosis and treatment are poor, it can turn into chronic eczema, inducing severe itching and even leading to local skin inflammatory infiltration, which is manifested as skin thickening, moss-like and rough lesions, which can reduce the patient's quality of life. Therefore, attention should be paid to rash treatment. In clinical practice, skin rashes are mostly treated conservatively with drugs. Glucocorticoids are commonly used, which can inhibit the proliferation of skin lesions, fight inflammation, and improve skin physiological functions. However, glucocorticoids have a high risk of side effects and cannot restore the physiological functions of the damaged skin. Some scholars suggest combining the treatment with mucopolysaccharide polysulfate cream to

enhance the curative effect. This article selected 70 chronic eczema patients treated from April 2022 to April 2023 as samples to explore the therapeutic efficacy of mucopolysaccharide polysulfate cream combined with desonide cream.

2. Materials and methods

2.1. General information

A sample of 70 patients with chronic eczema admitted from April 2022 to April 2023 were randomly divided into groups. There was no difference in the data of patients with chronic eczema in groups A and B, $P > 0.05$. The details are shown in **Table 1.**

Table 1. Analysis of the data of patients with chronic eczema

Group	Gender		Age (years)		Duration of disease (years)		Skin lesion area proportion (%)	
	Male	Female	Range	Mean	Range	Mean	Range	Mean
Group A (n = 35)	21 (60.00)	14 (40.00)	20–77	50.14 ± 0.84	1–9	4.24 ± 0.85	1–5	2.79 ± 0.25
Group B (n = 35)	22 (62.86)	13 (37.14)	21–78	50.17 ± 0.86	1–8	4.21 ± 0.87	1–6	2.84 ± 0.27
χ^2/t	0.0589		0.1476		0.1459		0.8039	
P	0.8083		0.8831		0.8844		0.4243	

2.2. Inclusion and exclusion criteria

Inclusion criteria included patients who can follow the doctor's instructions and apply the medicine, patients who give informed consent, and patients who do not carry out chronic eczema treatment independently.

Exclusion criteria were patients with chronic eczema in the acute phase, patients with other skin diseases such as acne and psoriasis, patients with organ lesions, and patients with rashes in the perianal and vulvar areas.

2.3. Treatment methods

To clean the local skin of chronic eczema and severe itching, loratadine tablets (Bayer Pharmaceuticals Co., Ltd.) were given, a single dose of 10mg, once a day.

Group A was treated with desonide cream (Chongqing Huabang Pharmaceutical Co., Ltd.) and mucopolysaccharide polysulfate cream (Mobilat Produktions GmbH). Desonide cream was applied evenly on the lesion area, followed by massaging for 2–5 minutes, and then mucopolysaccharide polysulfate cream was applied and massaged again for 2–5 minutes until the cream is completely absorbed. The treatment was done 2 times per day for one month.

Group B was treated with desonide cream, and the regimen was the same as group A, with the treatment done for one month.

2.4. Observation of therapeutic effect

If the skin area decreases by 60–94%, it will be considered markedly effective. If it decreases by 20–59%, it will be considered effective. If the skin area decreases by less than 20%, it will be considered ineffective.

2.5. Statistical analysis

The data of chronic eczema patients were processed with SPSS21.0. Chronic rash count data were recorded in %, and χ^2 test was performed. Chronic rash measurement data were recorded in mean ± standard deviation (SD) and t test was performed. $P < 0.05$ indicates that there is a statistical difference.

3. Results

3.1. Comparison of therapeutic effects on chronic eczema

The curative effect on chronic eczema in group A (97.14%) was higher than that in group B, which was 80.00%, $P < 0.05$. The results are shown in **Table 2**.

Table 2. Comparison of therapeutic effects on chronic eczema [n (%)]

Group	Markedly effective	Effective	Ineffective	Effective rate
Group A (n = 35)	29 (82.86)	5 (14.29)	1 (2.86)	97.14%
Group B (n = 35)	20 (57.14)	8 (22.86)	7 (20.00)	80.00%
χ^2	-	-	-	5.0806
P	-	-	-	0.0242

3.2. Comparison of target skin lesion area and skin lesion area score

After treatment, the target skin lesion area and skin lesion area score of patients with chronic eczema in group A were smaller and lower than those of group B, $P < 0.05$. Before treatment, the target skin lesion area and skin lesion area score of group A were no different from those of group B, $P > 0.05$. The results are presented in **Table 3**.

Table 3. Comparison of target skin lesion area and skin lesion area score (mean ± SD)

Group	Target skin area (cm^2)		Skin lesion area score (points)	
	Before medication	After medication	Before medication	After medication
Group A (n = 35)	51.87 ± 2.43	12.42 ± 1.05	2.95 ± 0.43	0.61 ± 0.11
Group B (n = 35)	51.89 ± 2.49	33.19 ± 1.43	2.96 ± 0.42	1.18 ± 0.23
t	0.0340	69.2619	0.0984	13.2267
P	0.9730	0.0000	0.9219	0.0000

3.3. Comparison of skin lesion-symptom scores

After treatment, the scores of itching degree, skin color, skin elasticity, and skin lesion thickness of patients with chronic eczema in group A were all lower than those of group B, $P < 0.05$. Before treatment, there was no difference in the skin lesion-symptom scores of group A and group B, $P > 0.05$. The results are shown in **Table 4**.

Table 4. Comparison of skin lesion-symptom scores (mean ± SD)

Group	Degree of itching (minutes)		Skin color (minutes)		Skin elasticity (minutes)		Skin lesion thickness (minutes)	
	Before medication	After medication	Before medication	After medication	Before medication	After medication	Before medication	After medication
Group A (n = 35)	2.42 ± 0.85	0.73 ± 0.25	2.74 ± 0.78	0.71 ± 0.26	2.69 ± 0.78	0.69 ± 0.25	2.78 ± 0.88	0.67 ± 0.23
Group B (n = 35)	2.46 ± 0.87	1.32 ± 0.36	2.73 ± 0.79	1.33 ± 0.38	2.67 ± 0.81	1.42 ± 0.39	2.81 ± 0.89	1.41 ± 0.36
t	0.1946	7.9638	0.0533	7.9663	0.1052	9.3227	0.1418	10.2479
P	0.8463	0.0000	0.9577	0.0000	0.9165	0.0000	0.8877	0.0000

3.4. Comparison of satisfaction with chronic eczema treatment

Based on **Table 5**, the satisfaction rate of chronic eczema treatment in group A was 97.14%, which was higher than that in group B (77.14%), $P < 0.05$.

Table 5. Comparison of satisfaction with chronic eczema treatment [n (%)]

Group	Satisfied	Basically satisfied	Not satisfied	Satisfaction rate
Group A (n = 35)	26 (74.29)	8 (22.86)	1 (2.86)	97.14%
Group B (n = 35)	15 (42.86)	12 (34.29)	8 (22.86)	77.14%
χ^2	-	-	-	6.2477
P	-	-	-	0.0124

4. Discussion

The pathogenesis of chronic eczema is unknown, and histological changes are apparent. Typical features of chronic eczema are cell infiltration and exudation. Summary analysis shows that chronic eczema has no specific onset group, and the onset time is not seasonal. Based on the analysis of clinical practice, chronic eczema is related to the combined influence of external and internal factors, that is, it develops under the influence of bacterial infection, poor living habits, endocrine disorders, unclean diet, and other factors [1]. Relevant literature reports that the patient's allergic constitution is the main factor inducing chronic eczema. Under the influence of the above factors, type IV delayed allergic reaction occurs and manifests as skin lesions [2]. In addition, chronic eczema has a long course of disease and is often protracted and difficult to heal, thus it requires early diagnosis and treatment. Currently, most clinical treatments for chronic eczema use external hormones to promote the regression of skin lesions and reduce the area of skin lesions. However, chronic eczema has a high recurrence rate with prolonged repeated skin lesions, that require continuous external hormone treatment, which can cause many hormones to accumulate in the local skin, leading to skin atrophy and dullness. Hormones treatment reduces the skin's moisture content and increases skin dryness. Therefore, exploring efficient combination regimens for treating chronic eczema is essential.

This article selected desonide cream to treat chronic eczema. It is a glucocorticoid drug that can inhibit inflammation. It can reduce swelling and itching symptoms when applied to the external skin. It can also optimize the skin color, reduce skin itching, and adjust the skin texture. Relevant literature reports that chronic eczema in infants and young children can be treated with desonide cream, which can quickly control the eczema condition [3]. However, it should be noted that the typical pathological characteristics of chronic eczema are metabolic dysfunction, skin keratosis, inflammatory infiltration, and skin barrier dysfunction. Treatment with glucocorticoids can optimize the function of stratum corneum and restore the skin's physiological functions. However, eczema often recurs without healing, thus the long-term application of external glucocorticoids has specific toxic side effects, which can affect the treatment efficacy. In addition, when desonide cream is applied externally, the concentration of the cream absorbed by the skin lesion area is high in the early stage, which can quickly alleviate the symptoms of skin lesions. However, after external application for some time, the physiological functions of the local skin are enhanced, thus the concentration of the absorbed cream is reduced, resulting in a prolonged administration period. Moreover, long-term external application of glucocorticoids can act on cuticle cells, causing the loss of cuticle differentiation enzyme activity, thereby damaging the stratum corneum structure and reducing the number of new cells, which is manifested as a reduction in skin thickness in the damaged area [4]. At the same time, the long-term application of desonide cream can also affect lipid components and cause local skin acid-base disorders. Therefore, external application of desonide cream alone is required in order to improve skin functional indicators such as oil and stratum corneum effectively.

Some scholars suggest that patients with chronic eczema should be given mucopolysaccharide polysulfate

cream after applying desonide cream. It is a low-molecular-weight heparin that is rich in polyiodic acid mucopolysaccharide. It can moisturize the skin, reduce swelling and inflammation, and inhibit exudation. Through the analysis of clinical practice, polyiodic acid mucopolysaccharide has strong permeability, it can penetrate the dermis and the subcutaneous tissue in a short time, inhibit the synthesis of prostaglandins in the skin lesion area, and block the diffusion of hyaluronidase, thereby stimulating local blood supply, reducing swelling and inflammation [5]. In addition, after the mucopolysaccharide polysulfate cream is applied externally, the medicinal ingredients can act on the intercellular area, improve intercellular permeability, stimulate cell and connective tissue metabolism, and promote cell regeneration, which help to moisturize the skin and avoid skin cracks and dryness. In the literature involving patients with chronic eczema treated with external application of mucopolysaccharide polysulfate cream, it reported that it can reduce the area of skin lesions, suppress itching, and improve skin color. The synergistic effect of mucopolysaccharide polysulfate cream combined with desonide cream can promote the drugs to penetrate deeply into the skin tissue, which enhances the eczema treatment effect [6].

Based on the data analysis in this article, the treatment efficacy of chronic eczema in group A was 97.14%, which was higher than that in group B, which was 80.00%, $P < 0.05$. The addition of mucopolysaccharide polysulfate cream can improve the treatment efficacy of chronic rash. Simple treatment with desonide cream, a glucocorticoid drug, can achieve anti-inflammatory, anti-itching, and anti-allergic effects and stimulate vasoconstriction. If it is applied according to medical instructions, it can promote local swelling symptoms caused by inflammatory infiltration. It can also lower the temperature of the skin lesion area, and adding mucopolysaccharide polysulfate cream can increase skin permeability and enhance the efficacy of desonide cream [7]. The results also showed that the target skin lesion area of group A (12.42 ± 1.05 cm^2) was smaller than that of group B, and the score of skin lesion area of group A (0.61 ± 0.11) was lower than that of group B, $P < 0.05$. In group A, the degree of itching, skin color, skin elasticity, skin lesion thickness, and other scores were all lower than those in group B, $P < 0.05$. It can be seen that the addition of mucopolysaccharide polysulfate cream can promote the regression of skin lesions and reduce the symptoms of eczema. This may be because the main active ingredients of mucopolysaccharide polysulfate cream are polysulfonic acid-based mucopolysaccharides, which are heparin-like substances with significant anti-inflammatory effects. After external application, they can penetrate the subcutaneous tissue quickly and optimize the local blood, as well as enhance the skin's water-locking function [8]. Moreover, the addition of this drug can also stimulate the metabolism of the skin lesion area, which is beneficial to cell regeneration. It is a safe non-hormonal drug that can also shorten the administration cycle and dosage of hormonal drugs such as desonide cream [9]. The last data set showed that chronic eczema treatment satisfaction in group A was 97.14%, which was higher than that of group B, which was 77.14%, $P < 0.05$. It can be seen that the addition of mucopolysaccharide polysulfate cream can enhance the treatment satisfaction of patients with chronic eczema. This may be due to that the drug is administered according to the external application method. The active ingredients take effect directly in the skin lesion area without being metabolized by the viscera, which can reduce adverse drug reactions. The local blood concentration of the drug is high, and the effect is quick, thus the patient's treatment satisfaction is high. In addition, when applying external drugs to treat chronic eczema, the following matters need to be considered. Patients need to return to the hospital for review every 2–4 weeks so that the doctor can adjust the dosage plan. Patients should avoid contact with irritating substances and allergic substances. Patients should maintain positive and stable emotions and avoid mental stress. Doctors should actively diagnose and treat the primary disease, and if it is combined with other skin diseases, they should also actively diagnose and treat it accordingly [10].

In summary, chronic eczema patients treated with mucopolysaccharide polysulfate cream combined with

desonide cream can promote the regression of local skin lesions, reduce eczema symptoms, and improve the treatment satisfaction of eczema patients. This treatment method has high clinical application value.

Disclosure statement

The author declares no conflict of interest.

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