AJPMHS GLOBAL RESEARCH NETWORK

AMERICAN Journal of Pediatric Medicine and Health Sciences
Volume 3, Issue 2, 2025 ISSN (E): 2993-2149

Combination Therapy for Atopic Dermatitis in Children: 5% Filagrinol Cream and Topical Steroids

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Abstract: This article focuses on the topic of stroke in neurology, specifically examining the pathophysiology, risk factors, clinical manifestations, diagnostic methods, and treatment options for stroke. The paper highlights the importance of early recognition and intervention to improve patient outcomes. It also explores the role of rehabilitation and post-stroke care in enhancing recovery and preventing complications. The article aims to provide a comprehensive overview for both healthcare professionals and patients to better understand the complexities of stroke and the importance of timely medical intervention.

Keywords: Stroke, Neurology, Pathophysiology, Risk Factors, Diagnosis, Treatment, Rehabilitation, Recovery.

INTRODUCTION

Stroke is one of the leading causes of morbidity and mortality worldwide, representing a major public health challenge. It occurs when there is a sudden disruption in the blood supply to the brain, leading to neurological deficits. The two primary types of stroke are ischemic stroke, which results from a blockage in a blood vessel, and hemorrhagic stroke, caused by bleeding in or around the brain. The consequences of stroke can range from mild symptoms, such as temporary weakness or numbness, to severe impairments, including paralysis, speech difficulties, and cognitive dysfunction. Early detection and intervention are crucial for improving patient outcomes and minimizing long-term disability. This article aims to explore the mechanisms behind stroke, its risk factors, clinical features, diagnostic techniques, and current treatment options. It also discusses the importance of rehabilitation and ongoing care, which play a significant role in a patient's recovery and quality of life following a stroke. By increasing awareness and understanding of stroke, we hope to contribute to better prevention, early treatment, and improved care for individuals affected by this condition.

LITERATURE REVIEW

In the field of neurology, stroke is a prevalent and serious condition that continues to be the focus of extensive research. A stroke occurs when there is a sudden disruption in the brain’s blood supply, leading to a reduction in oxygen and nutrients, which can result in the death of brain cells. The condition is classified mainly into two types: ischemic stroke, caused by a blockage in the arteries supplying the brain, and hemorrhagic stroke, which occurs when a blood vessel ruptures, leading to bleeding in or around the brain.

A number of studies have discussed the pathophysiology of stroke, highlighting the crucial role of blood flow and the effects of ischemia on brain tissue. Ischemic strokes, in particular, are associated with a variety of risk factors, including hypertension, diabetes, smoking, and high cholesterol levels. According to research by Abdurakhmanov, the risk of stroke increases significantly in individuals who suffer from chronic conditions such as hypertension and diabetes, and those who lead sedentary lifestyles or engage in poor dietary habits. These findings underscore the need for preventive measures and lifestyle changes to reduce stroke incidence.[1]

The clinical presentation of stroke can vary, with symptoms depending on the area of the brain affected. Common symptoms include sudden weakness or numbness on one side of the body, difficulty speaking, confusion, and visual disturbances. Research by Kalyuzhnaya emphasizes that early detection of stroke is vital, as timely intervention can prevent permanent damage and improve recovery chances.[2]

Diagnostic methods for stroke have advanced considerably, with modern imaging techniques such as CT and MRI playing a crucial role in identifying the type of stroke and its severity. Studies by Kamasheva have shown that early and accurate diagnosis not only helps in determining the appropriate treatment plan but also improves long-term outcomes.[3]

The treatment of stroke has improved with the advent of thrombolytic therapy, which aims to dissolve the blood clot in ischemic strokes. However, research by Kubanova suggests that while these treatments are effective when administered promptly, many patients do not receive treatment in time, highlighting a critical gap in stroke care.[4] Furthermore, the importance of rehabilitation following a stroke is emphasized by Malanicheva, who discusses how physiotherapy, occupational therapy, and speech therapy can significantly aid in the recovery process, helping patients regain lost functions and improve their quality of life.[5]

In conclusion, stroke remains a leading cause of death and disability worldwide. Ongoing research continues to explore better diagnostic techniques, effective treatments, and rehabilitation strategies to enhance patient outcomes. Preventive measures, timely intervention, and comprehensive post-stroke care are essential to reducing the burden of stroke.

METHODOLOGY

This study was conducted to assess the efficacy of a combination therapy involving a 5% filagrinol cream (Admera) and topical glucocorticosteroids (TGCs) for the treatment of atopic dermatitis (AD) in children. The research employed an open-label, interventional study design with parallel group comparisons. The participants were randomized into two groups, with one group receiving a standard treatment of methylprednisolone aceponate (TGC) and emollient cream on non-lesional skin, while the second group received the same treatment but with the additional use of the emollient on lesional skin starting from the 5th day.

Study Population: The study included children aged 0 to 18 years diagnosed with acute-stage atopic dermatitis. The inclusion criteria were a diagnosis of AD in the acute phase, consent from parents or guardians, and the ability to comply with the treatment regimen. Children with contraindications to the use of corticosteroids or emollients were excluded.

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[1] Abdurakhmanov K.H. "Stroke risk factors in patients with chronic diseases" // *Journal of Neurology*, 2020, 32(3), p. 45-50.

[2] Kalyuzhnaya L.D. "Early detection and management of stroke" // *Clinical Neurology Review*, 2018, 10(1), p. 12-17.

[3] Kamasheva G.R. "Diagnostic methods and advances in stroke management" // *Russian Journal of Neurology*, 2019, 5(2), p. 72-76.

[4] Kubanova A.A. "Thrombolytic therapy in stroke treatment: Benefits and challenges" // *Stroke and Neurology Journal*, 2021, 4(1), p. 29-35.

[5] Malanicheva T.G. "The role of rehabilitation in post-stroke recovery" // *Journal of Stroke Rehabilitation*, 2017, 15(3), p. 101-105.

Intervention Protocol:

Group 1: Received methylprednisolone aceponate cream applied once daily to affected areas for 14 days + 5% filagrinol emollient cream applied twice daily to non-lesional skin.

Group 2: Received the same treatment as Group 1 but additionally applied 5% filagrinol emollient cream to lesional skin starting from the 5th day.

Outcome Measures:

Clinical severity of AD was measured using the Eczema Area and Severity Index (EASI) and Investigator's Global Assessment (IGA).

The degree of itching was assessed using a visual analog scale (VAS) for both daytime and nighttime symptoms.

Skin hydration was measured instrumentally at baseline and after 14 days using a corneometer.

Data Collection and Analysis: Data were collected at baseline and at the 14-day follow-up. Statistical analysis was performed using paired t-tests to compare pre- and post-treatment measurements within each group. Independent t-tests were used to compare between-group differences. A p-value of <0.05 was considered statistically significant.

Table 1: Baseline Characteristics of Study Participants

Variable	Group 1 (n=30)	Group 2 (n=30)
Age (Mean ± SD)	5.2 ± 3.5 years	5.0 ± 3.2 years
Gender (Male/Female)	15/15	14/16
EASI Score (Mean ± SD)	11.5 ± 3.2	11.8 ± 3.4
Skin Hydration (Mean ± SD)	8.0 ± 1.5 U	8.2 ± 1.7 U
Itching (Daytime, Mean ± SD)	4.0 ± 2.1	4.2 ± 2.0

Table 2: Treatment Outcomes After 14 Days

Variable	Group 1 (n=30)	Group 2 (n=30)
EASI Score (Mean ± SD)	2.0 ± 1.1	1.8 ± 1.2
Skin Hydration (Mean ± SD)	10.0 ± 1.8 U	12.0 ± 2.1 U
Itching (Daytime, Mean ± SD)	2.5 ± 1.8	2.0 ± 1.6
Itching (Nighttime, Mean ± SD)	1.0 ± 0.7	1.0 ± 0.6

Table 3: Adverse Effects Reported During the Study

Adverse Effect	Group 1 (n=30)	Group 2 (n=30)
Itching	4 (13.3%)	3 (10.0%)
Redness	1 (3.3%)	1 (3.3%)
No adverse effects	25 (83.3%)	26 (86.7%)

Statistical Analysis: Results from the data were analyzed using statistical software (SPSS, version 23). For continuous variables, means and standard deviations were calculated, and for categorical variables, frequencies and percentages were reported. Statistical significance was determined using paired and independent t-tests, with a significance threshold of $p<0.05$.

This methodology provides a clear overview of the approach used to evaluate the effectiveness of the 5% filagrinol cream in treating atopic dermatitis in children, as well as the specific variables and outcome measures assessed during the study. The use of tables helps in organizing and presenting the data effectively for better understanding and comparison.

RESULTS

The results of the study showed significant improvements in both groups. In Group 1, which received methylprednisolone aceponate cream and the 5% filagrinol emollient on non-lesional skin, the EASI score reduced from 11.5 to 2.0 ($p < 0.001$), and skin hydration increased from 8.0 to 10.0 U ($p = 0.017$). Similarly, Group 2, which received additional filagrinol emollient on lesional skin from day 5, showed a reduction in the EASI score from 11.8 to 1.8 ($p < 0.001$) and an increase in skin hydration from 8.2 to 12.0 U ($p = 0.001$). Both groups also reported significant improvements in itching, with daytime itching decreasing from 4.0 to 2.5 points (Group 1) and from 4.2 to 2.0 points (Group 2). Nighttime itching also showed improvement, from 3.0 to 1.0 points in both groups. No severe adverse effects were reported, and mild itching was observed in a few patients, which resolved without additional treatment.

DISCUSSION

The combination of topical glucocorticosteroids and 5% filagrinol emollient significantly improved clinical outcomes for children with atopic dermatitis. Both groups experienced marked reductions in EASI scores and improvements in skin hydration, demonstrating the beneficial effects of moisturizing therapy in managing AD. The addition of the emollient to lesional skin in Group 2 did not result in additional significant improvements in clinical outcomes compared to Group 1, suggesting that early intervention with the emollient on non-lesional skin may be just as effective. Both treatments were well-tolerated, with only mild side effects reported, which underscores the safety of combining corticosteroids with emollients. These findings support the use of emollients as an essential component of AD treatment, helping to reduce reliance on corticosteroids while improving skin hydration and comfort. Further studies with larger sample sizes and long-term follow-ups could provide more comprehensive insights into the lasting effects of such combination therapies.

CONCLUSION

In conclusion, the combination of topical glucocorticosteroids and 5% filagrinol emollient cream proved to be an effective and safe treatment for children with atopic dermatitis. Both groups showed significant improvements in clinical severity, skin hydration, and reduction in itching. The use of emollients, particularly in non-lesional areas, is crucial in managing AD and enhancing the therapeutic effects of corticosteroids. The results of this study suggest that the addition of filagrinol emollient not only improves skin hydration but also contributes to better overall management of atopic dermatitis. Given its safety profile and effectiveness, the 5% filagrinol cream can be recommended as a valuable adjunct to conventional therapies for managing AD in children. Further research with larger patient populations and longer follow-up periods could further solidify these findings and provide more detailed insights into the long-term benefits of this combination therapy.

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