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Original Research Article

Comparative Efficacy of Topical Tacrolimus 0.03% Ointment Vs. 0.005% Fluticasone in the Treatment of Sub Acute Eczema

P. Anil Kumar[1], G. Reena Prasoona[2], Sowmya Alahari[3], K. Raj Kumar[4]

[1]Associate Professor, Department of Pharmacology, Viswabharathi Medical College, Kurnool

[2]Assistant Professor, Department of Physiology, Kurnool Medical College, Kurnool

[3]Assistant Professor, Department of Pharmacology, Viswabharathi Medical College, Kurnool

[4]Associate Professor, Department of Pharmacology, Santhiram Medical College, Nandyala

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Corresponding author: Dr. K. Raj Kumar

Conflict of interest: Nil

Abstract

Introduction: Eczema is a clinical and histological pattern of inflammation of the skin seen in a variety of dermatoses with widely diverse aetiologies. The present study was undertaken to compare the efficacy of Topical Tacrolimus 0.03 % ointment vs 0.005% Fluticasone in the treatment of sub-acute eczemas

Materials and Methods: This is a prospective, randomized; open-labelled interventional study carried out at tertiary care hospital included 100 patients with sub-acute eczemas. They were allocated at a ratio of 1:1 to either Tacrolimus 0.03% Ointment group A or Fluticasone 0.005% ointment group B. Group A subjects were treated with Tacrolimus 0.03% Ointment once daily for 4 weeks follow up at 1 week, 1 month & 3 months Another Group B patients were treated with Fluticasone 0.005% ointment once daily for 4 weeks follow up at 1 week, 1 month & 3 months.

Results: Percent reduction of Eczema assessment severity index score at the end of 4 weeks was 83.70±1.73 in group A and 79.10±2.17 in group B ($P<0.001$) which was significant ($P<0.001$). Adverse effects were observed in 10 % of patients in Group A and 18% of group B after 4 weeks, with a major side effect of Folliculitis (8%) in Group B which was not significant.

Conclusion: We concluded that Patients who received Tacrolimus 0.03% ointment had better clinical improvement in terms of efficacy, and was better tolerated in terms of side effects compared with Fluticasone 0.005% ointment.

Keywords: Efficacy, Fluticasone, Tacrolimus, Sub-acute eczemas.

Background

Eczema, a term derived from the Greek word meaning 'to boil', is a clinical and histological pattern of inflammation of the skin seen in a variety of dermatoses with widely diverse aetiologies. Clinically, eczematous dermatoses are characterized by

variable intensity of itching and soreness, and, in variable degrees, a range of signs including dryness, erythema, excoriation, exudation, fissuring, hyperkeratosis, lichenification, papulation, scaling and vesiculation. Histologically, the clinical signs are reflected by a range of epidermal changes including spongiosis (epidermal oedema) with varying degrees of acanthosis and hyperkeratosis, accompanied by a lymphohistiocytic infiltrate in the dermis. The terms 'dermatitis' and 'eczema' are generally regarded as synonymous, although some authors still use the term 'dermatitis' to include all types of cutaneous inflammation, so that all eczema is dermatitis, but not all dermatitis is eczema [1].

Point prevalence of eczema in india 6.75% [2]. The lifetime clinician-recorded prevalence of eczema has been seen to peak in infancy, with female predominance of eczema presentations occurring during the reproductive period of 15–49 years [3]. The cause of eczema is unknown but is presumed to be a combination of environmental factors like unhygienic conditions, allergic reactions to dust mites & genetic factors like fillagrin [4] protein. The condition may be acute, sub-acute or chronic.

The diagnostic criteria that were recommended by the American Academy of Dermatology at the 2003 consensus are currently used by many clinicians for the diagnosis and treatment of children & adults. With the intent of bringing to the uniformity to the diagnosis of Atopic Dermatitis, Hanifin and Rajka proposed diagnostic criteria based on their clinical experience [5]. Tacrolimus & Pimecrolimus are macrolide immunosuppressants that have been shown to be of significant benefit in the treatment of atopic dermatitis. Both agents inhibit T lymphocyte activation and prevent the release of inflammatory cytokines and mediators from mast cells in vitro after stimulation by antigen – IgE complexes. Tacrolimus is available as 0.03% and 0.1% ointment and Pimecrolimus as 1% cream. Both are indicated for short term and intermittent long term therapy for mild to moderate atopic dermatitis [6].

Topical corticosteroids have been used to treat Atopic Dermatitis for more than 60 years. Their efficacy has been demonstrated with a wide variety of preparations and strengths, with more than 110 different RCTs performed to date [7]. Topical Fluticasone 0.005% is used in the management of mild to moderate atopic dermatitis [8].

The present study was undertaken to compare the clinical efficacy of Topical Tacrolimus 0.03% Ointment and Fluticasone 0.005% Ointment in the treatment of Sub Acute Eczemas among the patients attending tertiary care hospital.

Materials and Methods

This is a prospective, randomized, open-labeled interventional study carried out at Viswabharathi Medical College & Hospital from 2021 to 2022 after obtaining ethical clearance & with the informed consent of all the subjects.

Inclusion criteria were patients of age ≥18 years, both genders, patients diagnosed clinically with sub-acute eczema, and EASI score 0 to 72. Exclusion criteria were Acute eczemas with oozing, Children below 18 years & adults above 60 years, Eczemas occurring on the face, Patients applying any other ointments, and patients with Lichenification

100 patients with sub-acute Eczema were allocated at a ratio of 1:1 to either Tacrolimus 0.03% Ointment group A or Fluticasone 0.005% ointment group B. Group A subjects were treated with Tacrolimus 0.03% Ointment once daily for 4

weeks follow up at 1 week, 1 month & 3 months. Other Group B patients were treated with Fluticasone 0.005% ointment once daily for 4 weeks follow up at 1 week, 1 month & 3 months.

Statistical Methods

Descriptive and inferential statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean ± SD and results on categorical measurements are presented in Number (%). Significance is assessed at 5% level of significance. Student 't' test (two tailed, independent) has been used to find the significance of study parameters on continuous scale between two groups . Chi-square/ Fisher Exact test has been used to find the significance of study parameters on categorical scale

Results

A total of 100 patients took part in the study. Group A 50 patients received topical Tacrolimus 0.03% ointment and Group B received topical Fluticasone 0.005% ointment daily once for 4 weeks.

The age distribution in both groups was comparable as shown in table 1. Majority of patients were in the age group of 31 – 40 years (40% in Group A and 42% in Group B).

Table 1: Age distribution of patients studied in sub-acute eczemas

Age in years	Group A	Group B
<20	2(4%)	0(0%)
20-30	14(28%)	20(40%)
31-40	20(40%)	21(42%)
41-50	9(18%)	6(12%)
51-60	5(10%)	3(6%)
Total	50(100%)	50(100%)
Mean ± SD	35.64±10.07	33.50±9.11

There were more female patients in both groups (52% in Group A, 54% in Group B) compared to male patients (48% in Group A, 46% in Group B)

Table 2: Gender distribution of patients studied in sub-acute eczemas

Gender	Group A	Group B
Female	26(52%)	27(54%)
Male	24(48%)	23(46%)
Total	50(100%)	50(100%)

Case proformas were used to record pretreatment scores at the first visit and graded as 0 to 2 based on Eczema Assessment Severity Index which includes signs of severity like Erythema, Scaling(Excoriation), Papulation, area affected and percentage of area involved (0-100%). Maximum pretreatment scores were 12-16 in Group A (58%) and > 16 in Group B (70%).

Table 3: Pre Treatment Scores distribution in two groups of patients studied in sub-acute eczemas

Pre Treatment Scores	Group A	Group B
<12	1(2%)	0(0%)
12-16	29(58%)	15(30%)

>16	20(40%)	35(70%)
Total	50(100%)	50(100%)
Mean ± SD	15.75±2.41	17.46±3.01

Table 4: Eczema assessment severity index score distribution in two groups of patients studied at the end of 1 week

Eczema assessment severity index score	Group A	Group B	P value (student t test
Pretreatment scores	15.75±2.41	17.46±3.01	<0.001
Post treatment score reduction percentage at1week (%)	25.00±1.41	22.42±1.45	

Table 5: Eczema assessment severity index score distribution in two groups of patients studied at the end of 4 weeks

Eczema assessment severity index score	Group A	Group B	P value (student t test_
Pretreatment scores	15.75±2.41	17.46±3.01	<0.001
Post treatment percentage score reduction at 4 weeks (%)	83.70±1.73	79.10±2.17	

Adverse effects was assesses at the end of 1 week which showed 10% of Group A having Burning sensation, 4% in Group B having Pruritus

Table 6: Adverse effects at 1 week

Adverse effects at 1 week at application site	Group A (n=50)	Group B (n=50)	P value (Fisher Exact test)
No	45(90.0%)	48(96.0%)	0.436
Yes	5(10.0%)	2(4.0%)	
Burning sensation	5(10.0%)	0	
Pruritus	0	2(4.0%)	

Adverse effects were assessed at 4 weeks which showed 8% of Folliculitis in Group B patients

Table 7: Adverse effects at 4 weeks at application site distribution in two groups of patients studied

Adverse effects at 4 weeks at application site	Group A (n=50)	Group B (n=50)	P-Value (Chi-Square Test)
No	45(90%)	41(82%)	0.102
Yes	5(10%)	09(18%)	
• Folliculitis	1(2%)	4(8%)	
• Burning sensation	2(4%)	3(6%)	
• Pruritus	2(4%)	2(4%)	

Discussion

This study was designed to compare the efficacy and safety of topical Tacrolimus 0.03% ointment vs topical Fluticasone 0.005% ointment in the treatment of sub-acute eczemas.

Patients who were followed up at first week, showed reduction of Eczema assessment Severity Index, the percentage of score reduction in Group A was 25.00±1.41 and in Group B was 22.42±1.45,which showed a significant difference between two groups (p value <0.001). A study done by Lebwohl M *et al* [9] showed similar reductions in scores with topical Fluticasone 0.005% ointment.

Adverse effects like burning sensations were observed in 10% of patients in Group A after 1 week, Pruritus in 4% of patients in Group B after 1 week which showed no significant difference (p value- 0.438).A study done by Reitamo *et al* [10] showed similar side effects as in our study for Tacrolimus 0.03% ointment at the end of 1 week. A study done by Lebwohl M *et al* [9] showed similar side effects as in our study with topical Fluticasone 0.005% ointment at the end of 1 week.

Patients were followed up at 4 weeks and showed a reduction of Eczema assessment Severity Index. The percentage of score reduction in Group A was 83.70±1.73 and in Group B was 79.10±2.17 which showed a significant difference between two groups (p value <0.001).

A study done by Langa Y *et al* [11] and Lebwohl M *et al* [9] showed a similar reduction in scores with topical Tacrolimus 0.03% ointment and topical Fluticasone 0.005% ointment respectively at 3 weeks which is in concordance with our study.

Adverse effects like burning sensation were observed in 10% of patients in Group A and 18% of group B after 4 weeks, with a major side effect of Folliculitis (8%) in Group B, but this was not statistically significant (p-value- 0.102) in accordance with the study done by Lebwohl M *et al* [9].

Conclusion

Our study shows that topical Tacrolimus 0.03% ointment is more efficacious and better tolerated when compared to topical Fluticasone 0.005% ointment in the treatment of subacute eczemas.

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