

Original Research Article

Palmoplantar psoriasis: a comparative therapeutic study

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ABSTRACT

Background: Psoriasis is an immunologically mediated inflammatory dermatosis presenting with extremely variable clinical manifestations ranging from indolent lesions to life threatening forms of pustular and erythrodermic psoriasis. Palmoplantar psoriasis present as hyperkeratotic scaly plaques with fissures and can be managed with different treatment forms. This study was done to compare the efficacy between topical and systemic treatment options.

Methods: The study was conducted in a tertiary level teaching hospital after ethical committee clearance. Fifty patients with palmoplantar psoriasis were allocated into the two groups using simple random sampling. PPPASI scoring was calculated to assess the extent of involvement. Patients in Group A were prescribed calcipotriol with clobetasol propionate ointment. Group B patients were given tablet methotrexate.

Results: Twenty eight patients were males M: F of 1.27: 1. Mean age was 36. Mean duration of illness was eleven months. Most of these patients were manual laborers. 32 patients had lesions over both palms and soles, 9 over palms alone and 9 involving soles alone. Mean PASI reduction at 16 weeks was seen maximum with methotrexate. Compliance was comparatively good with methotrexate than topical. Though mean PASI reduction and compliance was good, relapse rates were higher with methotrexate in our study.

Conclusions: There was no significant change in clinico-epidemiology and presentation of palmoplantar psoriasis. Methotrexate was observed to be the more efficacious modality in treating palmoplantar psoriasis.

Keywords: Calcipotriol, Methotrexate, PPPASI

INTRODUCTION

Psoriasis is a common, immunologically mediated inflammatory dermatosis with genetic predisposition, characterized by erythematous scaly plaques involving the scalp and extensors of limbs affecting 0.5 to 1.5% individuals worldwide.

Palmoplantar psoriasis (PPP) is a localized form of psoriasis and can manifest in many different morphologic patterns, from predominantly pustular lesions to thickened, hyperkeratotic plaques and anything in between. It is characterized by erythema, hyperkeratosis

with surrounding lichenification and coarse scale, resulting in peeling, blistering, crusting, fissuring and bleeding. These symptoms may significantly interfere with activities, inhibiting patients from closing their hands or walking comfortably on their feet, leading to major disability and reduction in quality of life.¹ Palmoplantar lesions are frequently associated with psoriatic plaques elsewhere, but can occur in isolation also.² In the absence of generalized psoriasis, palmoplantar psoriasis may present similarly to eczematous forms of dermatitis, such as irritant or allergic contact dermatitis, dyshidrotic eczema, atopic eczema, mycosis fungoides, fungal infections and

palmoplantar keratoderma making the diagnosis difficult.³ This study aims to explore the available data on treatment of palmoplantar psoriasis and its unique challenges.

METHODS

This prospective observational study was done on the patients attending psoriasis clinic in the department of dermatology at Sree Balaji Medical College Hospital between October 2015 to March 2016 after ethics committee clearance.

Inclusion criteria

50 patients attending psoriasis clinic with psoriasis of the palms and soles that were above 18 years of age, who had not undergone any treatment in the past and those who gave their full consent were enrolled in the study.

Exclusion criteria

Patients with acute infections, chronic medical illnesses, history of hepatitis or alcoholism, pregnant and breastfeeding females, those with photosensitivity, those who are immunocompromised and patients with known history of allergies for the topical medications to be used were excluded from the study.

All the enrolled patients were explained about the nature and course of the disease, benefits and possible side effects of treatment. Informed written consent was obtained from all these patients before initiation of treatment. All patients were thoroughly examined to assess the nature and extent of the disease. Diagnosis was mainly based upon the clinical history and morphology with doubtful cases being subjected to skin biopsy with their due consent. PASI scoring for palms and soles were calculated and investigations were done relevant to the disease and treatment to be given. Fifty patients with palmoplantar psoriasis were included into these two treatment groups using simple random sampling method.

Group A

Topical therapy using calcipotriol and clobetasol ointment.

Group B

Systemic therapy with oral methotrexate.

25 patients were included in group A. They were given ointment containing a combination of clobetasol propionate 0.05% w/w with calcipotriol, 0.0003% w/w. They were monitored regularly every two weeks to assess clinical improvement and also were advised to report immediately if they could sense any pain or burning over the lesions. Similarly 25 patients were included in the methotrexate group. After preliminary investigations, patients were given test dose of 5 mg of tablet methotrexate, 2.5 mg to be taken 12 hours apart.

After one week, blood investigations were repeated to look for acute myelosuppression and elevation of liver enzymes. If the blood investigations were found to be normal, patients were given tablet methotrexate 2.5 mg tablet three tablets a week with a total dosage of 7.5 mg per week according to Weinstein-Frost regimen.⁴ Patients were instructed to take the tablet after food in three divided doses on two consecutive days with a gap of 12 hours in between. Patients were followed up every 2 weeks for assessment of clinical response and blood investigations. Chest X-ray was repeated at the end of 3 months. The results were analyzed using Chi-square test. PASI Score for palms and soles was calculated as follows

PPPASI=Correction factor × Total score × Area of involvement of palms or soles.

PPPASI= 0.2 × (E_p+I_p+D_p) × AP+0.4 × (E_s+I_s+D_s) × AS

A: Area; P: Palms; S: Soles. Correction factor=0.2 for upper limbs; 0.4 for lower limbs.

RESULTS

This comparative therapeutic study was done on a single blind basis and results were tabulated based on the age group, gender, sites involved, PASI reduction observed across the two treatment groups namely the systemic and topical group. Denotion of the same would have been done as methotrexate group and topical group in some areas below.

Age

The mean age in our study population were 37.70 years in methotrexate group and 35.05 years in patients taking topical therapy. The minimum age in methotrexate and topical group were 22 and 19 years respectively. Similarly the maximum age in methotrexate and topical group were 56 and 48 years respectively (Table 1).

Table 1: Age distribution.

Group	Males	Females	Mean age	Maximum age	Minimum age
Methotrexate	15	10	37.70	56	22
Topical (Clobetasol+Calcipotriol)	13	12	35.05	48	19

Sex distribution

Males were relatively more in our study when compared to females. The total number of males enrolled in the study was 28. Out of them 15 males participated in the methotrexate group and 13 in the topical group. Among the 22 females 10 patients were randomized under methotrexate group and 12 under the topical group (Table 1).

Sites involved

Of the cases studied, the site of involvement was both palms and in 32 (64%) cases, whereas only palms were involved in 9 (18%) cases and only soles involved in 9 (18%) cases. In Group 1 (patients taking methotrexate), the sites involved were both palms and soles in 18 (72%) cases, only soles in 4 (16%) cases and only palms in 3 (12%) cases. In Group 2 (patients applying clobetasol with calcipotriol ointment), the sites involved were both palms and soles in 14 (56%) cases, only soles in 5 (20%) cases and only palms in 6 (24%) patients (Table 2).

Table 2: Site of involvement in the two groups.

Site	Methotrexate		Topical	
	n	%	n	%
Palms only	3	12	6	24
Soles only	4	16	5	20
Both palms and soles	18	72	14	56

PASI reduction

The following tables shows the mean PASI score at baseline and reduction of mean PASI score at 4 weeks, 8 weeks, 12 weeks, 16 weeks in the methotrexate and topical groups. The mean PASI score at baseline (Table 4) was 30.98 in methotrexate group and 26.66 in topical group. The minimum PASI score at baseline in methotrexate and topical group were 20.0 and 19.2. The maximum PASI score at baseline in methotrexate and topical groups were 39.4 and 32.8 respectively.

Table 3: Averages in PASI score at baseline in the two groups.

PASI at baseline	Mean	Median	Range	
			Min.	Max.
MTX (n=25)	30.98	31.29	20.0	39.4
Topical (n=25)	26.66	26.90	19.2	32.8

The mean PASI score at 4 weeks (Table 4) was 16.34 in systemic group and 14.91 in topical group. The minimum PASI score at 4 weeks in systemic and topical group was 10.2 and 10.0 respectively. The maximum PASI score at 4 weeks in the two groups were 22.2 and 20.2 respectively.

The mean PASI score at 8 weeks (Table 5) was 10.12 in methotrexate group and 12.04 in topical group. The minimum PASI score at 8 weeks in methotrexate and topical group were 4.4 and 5.6 respectively. The maximum PASI score at 8 weeks in methotrexate and topical group were identical at 13.4.

Table 4: Averages in PASI score at 4 weeks in the two groups.

PASI at 4 weeks	Mean	Median	Range	
			Min.	Max.
MTX (n=25)	16.34	16.10	10.2	22.2
Topical (n=25)	14.91	15.0	10.0	20.2

Table 5: Averages in PASI score at 8 weeks in the two groups.

PASI at 4 weeks	Mean	Median	Range	
			Min.	Max.
MTX (n=25)	10.12	10.40	4.40	13.4
Topical (n=25)	12.04	12.25	5.60	13.4

The mean PASI score at 12 weeks (Table 6) was 3.40 in methotrexate group and 5.60 in topical group. The minimum PASI score at 12 weeks in methotrexate and topical group is 0 and 2.2 respectively. The maximum PASI score at 12 weeks in methotrexate and topical group is 7.6 and 7.8 respectively.

Table 6: Averages in PASI score at 12 weeks in the two groups.

PASI at 12 weeks	Mean	Median	Range	
			Min.	Max.
MTX (n=25)	3.40	3.15	0.0	7.60
Topical (n=25)	5.60	5.80	2.20	7.80

The mean PASI score at 16 weeks (Table 7) was 0.49 in methotrexate group and 1.45 in topical group. The minimum PASI score at 16 weeks is 0.0 in methotrexate group and 1.20 in topical group. The maximum PASI score at 16 weeks in methotrexate and topical group is 3.2 and 4.2 respectively.

Table 7: Averages in PASI score at 16 weeks in the two groups.

PASI at 16 weeks	Mean	Median	Range	
			Min.	Max.
MTX (n=25)	0.49	0.0	0.0	3.20
Topical (n=25)	1.45	3.60	1.20	4.20

Percentage reduction in PASI score

In our study there was a gradual increase in percentage of mean reduction of PASI score over weeks. When compared to baseline mean PASI score, there was 98.9% reduction in mean PASI score at 16 weeks in

methotrexate group and in topical group there was 86.44% reduction in mean PASI score at 16 weeks. Methotrexate group had the maximum percentage reduction in mean PASI score at 16 weeks compared to the topical group (Table 8).

Table 8: Mean reduction in PASI score in the two groups (n=25 in each group).

Duration (in weeks)	MTX	Topical
Baseline	0	0
4	36.2	31.89
8	67.5	64.94
12	91.0	80.53
16	98.9	86.44

Response to therapy

Based on percentage reduction in PASI score the results were graded as excellent (100%), good (75-100%), moderate (50-75%) and poor (<50%).

In methotrexate group out of 25 patients 19 patients had complete clearance at 16 weeks and 6 had good response. Therefore 76% of patients had excellent response and 24% of patients had good response at 16 weeks (Table 9).

Table 9: Response to treatment in methotrexate group (n=25).

Results	No. of patients	%	% reduction in PASI score at 16 weeks
Excellent	19	76.00	100
Good	6	24.00	75-100
Moderate	-	-	50-75
Poor response	-	-	<50

In the topical group, 9 patients had complete clearance at 16 weeks and 14 had good response. One patient each had moderate and poor response respectively (Table 10).

Table 10: Response to treatment in topical group (n=25).

Results	No. of patients	%	% reduction in PASI score at 16 weeks
Excellent	9	36.00	100
Good	14	56.00	75-100
Moderate	1	4.00	50-75
Poor response	1	4.00	<50

DISCUSSION

Palmoplantar psoriasis is a localized form of psoriasis characterized by erythema, hyperkeratosis with surrounding lichenification and coarse scale, resulting in peeling, blistering, crusting, fissuring and bleeding.⁵

These symptoms may significantly interfere with activities, inhibiting patients from working with their hands or walking on their feet comfortably leading to major disability and reduction in quality of life. Once established, it might last for decades and can cause impaired dexterity or mobility, as well as discomforting pruritus and pain. This type of psoriasis is also chronic with frequent exacerbation, difficulty in management and resistant to therapy.⁶

The treatment modalities for psoriasis can be divided into topical, physical and systemic agents. Here in this study, we compared the therapeutic response between methotrexate, a systemic treatment modality and a clobetasol propionate plus calcipotriol ointment, a topical treatment modality. There are very few studies comparing the therapeutic efficacy between these agents and there is no single study comparing the efficacy of methotrexate and topical calcipotriol 0.0003% with clobetasol propionate 0.05% ointment.

We enrolled 50 patients with palmoplantar psoriasis not involving other body areas. They were randomly divided into two groups. Both the groups were well matched in terms of age, duration of lesions and baseline PASI score. They were followed up weekly after initiating treatment. PASI score were calculated at 0, 4, 8, 12 and 16 weeks.

Age distribution

Palmoplantar psoriasis may affect people of all ages. In this study, age group ranged from 12 years to 56 years with mean age of 30 years. This was in concurrence with the age incidence of earlier studies of Spuls et al which showed mean age of onset 28 years.⁷ Similarly, Sharma et al and Lal et al showed highest incidence to be in the second decade.^{8,9}

Sex distribution

In the current study, male patients constituted the majority. This concurred with most of the Indian studies. The higher incidence in males could be explained by the fact that though there is no strict variation in the occurrence of the disease in both sexes, the male patients come forward for examination and treatment whereas, there is a hesitancy on the part of females to come forward for treatment, for fear of social stigma and rejection.

Comparison of methotrexate and topical calcipotriol with clobetasol propionate ointment based on PASI scoring

In methotrexate group the mean baseline PASI score is 30.98 and mean PASI score at 16 weeks is 0.49. Therefore, there is 98.4% reduction in PASI score at end of 16 weeks. Dhir et al showed PASI reduction of 93% in 12 weeks.¹⁰

In topical group the mean baseline PASI score is 28.66 and mean PASI score at 16 weeks is 1.45. Therefore, there is 94.94% reduction in PASI score at end of 16 weeks. Lafah et al showed PASI reduction of 86% in 16 weeks.¹¹

PASI 75 was attained at 8-12 weeks in methotrexate group. This is in concurrence with Dhir et al.¹⁰ PASI 75 was attained in 10-12 weeks in topical group in close concordance with the study by Lafah et al.¹¹

Both the groups showed appreciable clearance in lesions at the end of 16 weeks but it took a longer time to achieve PASI 75 in topical group than in methotrexate group in concurrence with Paul et al.¹²

When MTX and topical groups were compared there was no statistical difference in reduction in PASI score at 0, 4, 8 weeks. But at 12 and 16 weeks there is statistically significant ($p < 0.001$) reduction in PASI score which was similar as in the study by Dhir et al.¹⁰

CONCLUSION

In our study with palmoplantar psoriasis patients, maximum number of patients was in the 30-40 years age group. Methotrexate therapy was the most effective modality of treatment in palmoplantar psoriasis. The mean PASI reduction was comparatively better with systemic methotrexate than with topical clobetasol with calcipotriol therapy. There were no dropouts either of the treatment groups.

When methotrexate therapy is compared with topical clobetasol with calcipotriol ointment therapy, the rate of clearance of lesions in the latter group was poor. PASI 75 was achieved early between 8-12 weeks in the systemic group whereas it was achieved at almost 16 weeks of treatment in the topical group.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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