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Research Article

Comparative study of oral methotrexate and acitretin in the treatment of palmoplantar psoriasis

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ABSTRACT

Background: Psoriasis is chronic inflammatory skin condition. Palmoplantar psoriasis is a type where lesions are present on the palms and soles. This type affects patient's quality of life and is difficult to treat. Topical modes of treatment are not so effective and produce inadequate response. Systemic drugs are necessary in the treatment of moderate to severe disease. The objective was to compare the efficacy of oral methotrexate and acitretin in treatment of moderate to severe palmoplantar psoriasis and there side effects.
Methods: 50 patients with palmoplantar psoriasis were randomized into 2 groups. Patients in group I received oral methotrexate and patients in group II received acitretin for 3 months. Baseline grading was done with Modified Psoriasis Area Severity Index (MPASI) score. MPASI score was assessed monthly. Scores at the beginning and at the end of 3 months of treatment were compared. Quality of life was assessed using a questionnaire.
Results: MPASI score in group I was 57.15 ± 17.17 at baseline and 14.50 ± 13.55 at the end of 3rd month. The difference in scores before and after treatment was statistically significant. MPASI score in group II was 57.76 ± 18.60 at baseline and 21.30 ± 8.168 at the end of 3rd month. Intragroup analysis showed statistically significant difference before and after treatment. There was significant improvement in the quality of life after treatment.
Conclusion: Oral methotrexate reduces the lesions faster than acitretin. Both oral methotrexate and acitretin are highly effective in treating palmoplantar psoriasis and in improving patient's quality of life.

Keywords: Psoriasis, Palms and soles, Quality of life, Immunosuppressive agents

INTRODUCTION

Psoriasis is a common chronic, disfiguring, inflammatory skin condition, in which both genetic and environmental influences have a critical role, and clinically characterized by sharply demarcated, erythematous, silvery white, scaly, indurated plaques mainly distributed over extensor surfaces, lower back and scalp.[1] Various types of psoriasis are described. Among them palmoplantar psoriasis affecting palms and soles is very resistant to treatment.[2] This could be due to the greater thickness of the involved skin, which makes it difficult for the topical agents to penetrate, or koebnerization triggered by repeated trauma (seen in about 50% of cases). Because of the recalcitrant nature, easy visibility and location on functionally exposed parts, the condition can lead to disability[3] and significant psychological effects[4,5] in many patients. Many patients with palmoplantar psoriasis do not have psoriasis of other parts of their body.[6] Diagnosis of psoriasis is usually clinical. Treatment of palmoplantar psoriasis is very demanding and challenging to the physician. The physical quality of life index is severely impaired with this type and with successful treatment there is significant improvement in quality of life. Therapy for palmoplantar psoriasis usually consists of topical medications with or

without occlusion, coal tar, PUVA therapy, systemic retinoids, and methotrexate or cyclosporine.[7] Existing topical treatments are ineffective[8] and show unpredictable response.[9] So other systemic can be used for patients with disability or added to the regimen of those who have failed topical therapy.

This is the reason why this study was undertaken to compare two systemic drugs methotrexate and acitretin[10,11] in the treatment of moderate to severe palmoplantar psoriasis. Methotrexate acts by inhibiting DNA synthesis.[12,13]

Acitretin is a vitamin A derivative and is approved for the treatment of palmoplantar psoriasis.[14] The aim of this study is to compare the clinical response of oral methotrexate and oral acitretin and the adverse effects encountered during treatment.

METHODS

This study was conducted in our teaching hospital during 2011 to 2012. Total numbers of 50 patients with moderate to severe palmoplantar psoriasis were included in the study.

Routine laboratory investigations were carried out. Pregnancy testing was done for women with child bearing age. Clinical photographs were taken. The lesions on the palms and soles were graded separately for erythema, scaling, induration and fissuring on a 5 point scale:

0 - Absent

1 - Mild or minimal

2 - Moderate

3 - Severe

4 - Very severe

Percentage of surface area affected was also graded as:

Table 1: Percentage of surface area affected.

Grade	Percentage of area involved
1	0 to 20%
2	20 to 40%
3	40 to 60%
4	60 to 80%
5	80 to 100%

Modified PASI (psoriasis area severity index) score = area involved x (erythema + scaling + induration + fissuring).[15,16]

Modified PASI score = (E+S+I+F) x Area involved

Patients were randomized into group I and group II, each group containing 25 patients.

- Patients in group I were prescribed oral methotrexate initially a test dose was given and later the dose was increased by 2.5 mg per week up to a maximum of 15mg/week for 3 months.
- Patients in group II were prescribed oral acitretin 0.5 mg/kg daily for 3 months.
- Other local or systemic medications were not permitted, except for topical application of liquid paraffin.
- Follow up was done monthly once by calculating modified psoriasis area severity index (MPASI) score and taking clinical photographs.
- At every visit respective modified PASI scores were compared with the previous scores.
- Improvement was graded as: no change, slight improvement (<25%), moderate improvement (26-50%), marked improvement (51-75%), and almost cleared (76-100%).
- Treatment success is defined as percentage of patients with moderate improvement, marked improvement or almost cleared.
- Analysis of the scores before and after treatment in each group was done by paired t test. Analysis of the difference between before and after scores in between the groups was done by unpaired t test. A P value of <0.05 was considered significant.

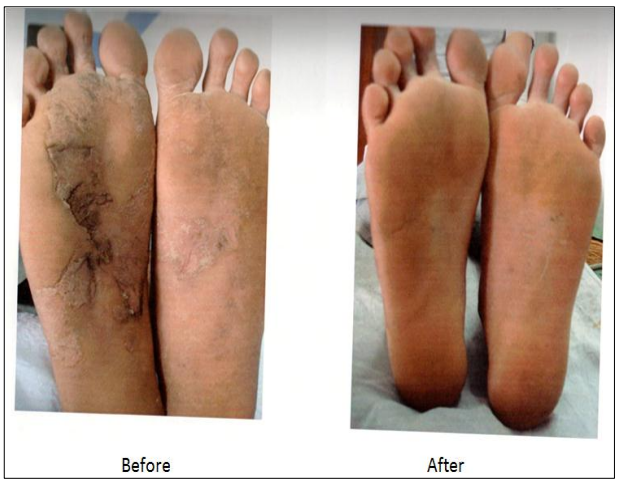

Figure 1: Soles: Before and after treatment with methotrexate for 3 months.

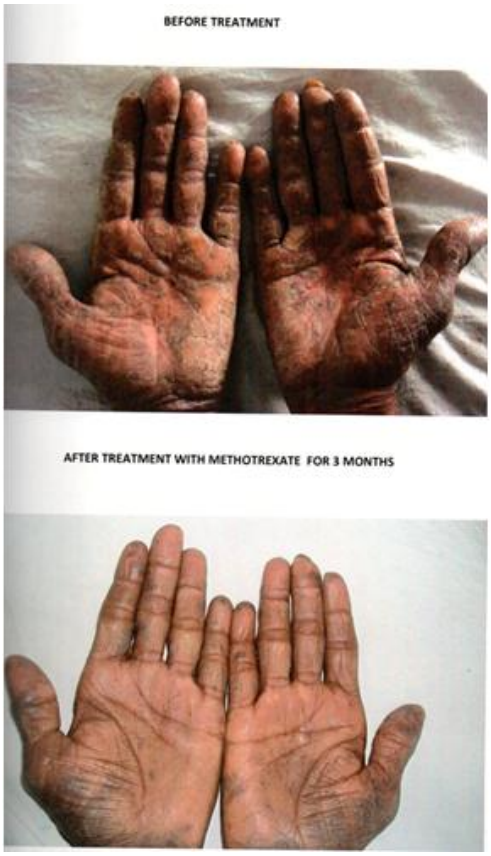

Figure 2: Palms: Before and after treatment with methotrexate for 3 months.

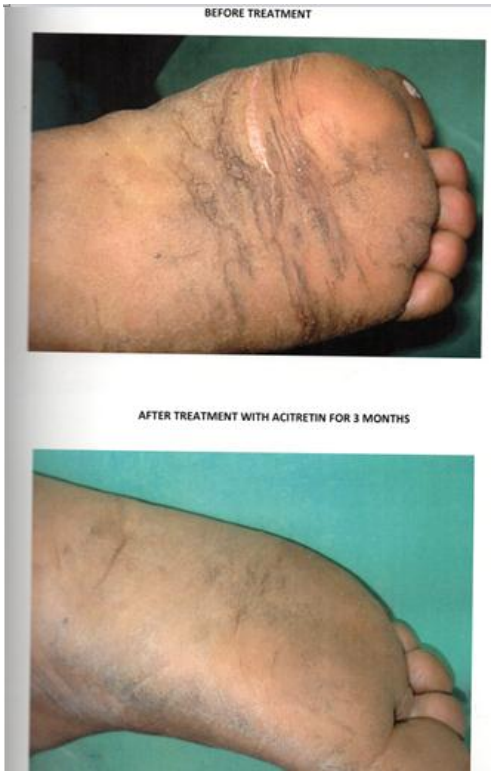

Figure 3: Soles: Before and after treatment with for acitretin 3 months.

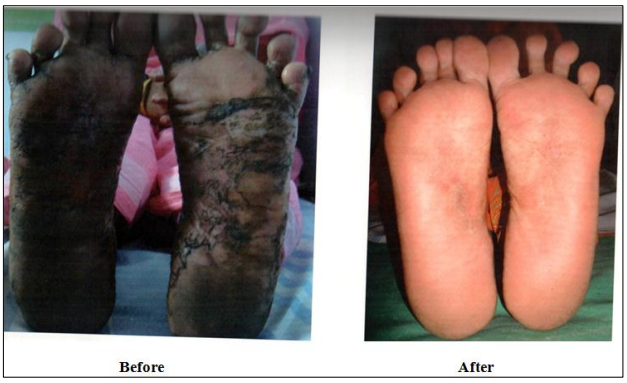

Figure 4: Soles: Before and after treatment with for acitretin 3 months.

RESULTS

Group I (Methotrexate): The mean MPASI score was 57.15 at the baseline, was 39.41 at the end of 1st month post treatment, 22.65 at the end of 2nd month post treatment and 14.50 at the end of 3rd month post treatment. The mean difference between baseline MPASI score and MPASI at the end of 3 months treatment was 42.5. The reduction of mean MPASI score at end of treatment compared to baseline was found to be statistically significant as the P values were <0.0001.

Group II (Acitretin): Mean MPASI score in this group before starting treatment was 57.76. At the end of 1st month post treatment the MPASI was 42.92, end of 2nd month post treatment was 31.07 and at the end of 3 months of treatment was 21.30. The mean difference between baseline MPASI score and MPASI score at the end of 3 months treatment was 36.76. The reduction of mean MPASI score at the end of treatment was significant as the P values were <0.0001 (Table 2).

Group I vs. II: The mean reduction in the MPASI scores from baseline to post treatment was 42.5 in group I and 36.76 in group II. The P value is 0.8134 which says that the difference is not statistically significant.

Adverse effects

Group I: With methotrexate the most common adverse effect was malaise, fatigue, headache and dizziness. Anemia was seen in 16% of patients (Table 3).

Group II: With acitretin most commonly dry lips/cheilitis was seen in 88% of patients. Lipid abnormalities especially triglyceride elevation was seen in 17% of patients (Table 4).

Clinical improvement after 3 months of treatment (Table 5)

Group I (methotrexate): In present study 65% of the patients were almost cleared of their disease (76-100%

improvement in MPASI score), 25% showed marked improvement (51-75% improvement in MPASI), 5% showed moderate improvement (26-50% improvement) (Figure 6).

Group II (acitretin): 15.5% of the patients were almost cleared of the disease and 69% of the patients showed marked improvement.

Table 2: Scores before and after treatment.

Groups	Particulars	Baseline mean MPASI	1st month mean MPASI	2nd month mean MPASI	3rd month mean MPASI	Diff B/W baseline and end of treatment
Groups I	Mean ± SD	57.15 ± 17.17	39.41 ± 15.29	22.65 ± 15.38	14.50 ± 13.55	42.5 ± 17.46
	P value	-	<0.0001	<0.0001	<0.0001	
Groups II	Mean ± SD	57.76 ± 18.60	42.92 ± 13.09	31.07 ± 9.66	21.30 ± 8.168	36.76 ± 14.686
	P value	-	<0.0001	<0.0001	<0.0001	
Groups I vs. II	P value	-	-	-	-	0.8134

MPASI: modified psoriasis area severity index, SD: standard deviation

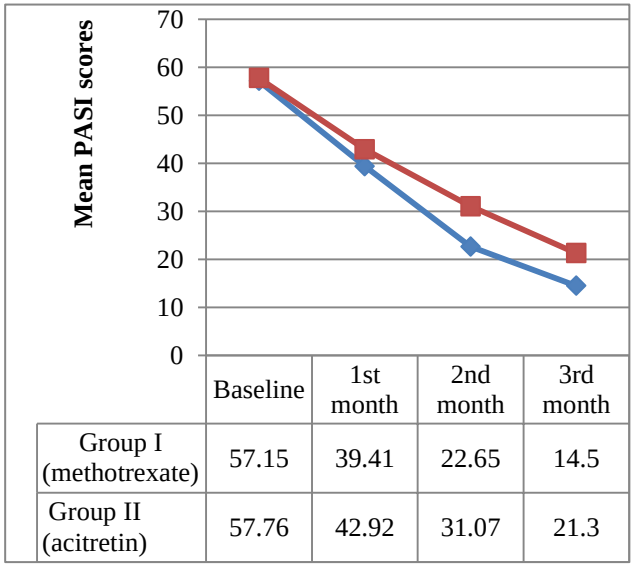

Figure 5: Reduction of mean MPASI score.

Table 3: Adverse effects in group I (methotrexate).

Effects	Percentage of patients
Nausea/vomiting	20%
Malaise/fatigue	28%
Headache/dizziness	28%
Loss of appetite	8%
Fever	20%
Hair loss	8%
Photosensitivity	4%
Pyoderma	8%
Acne	4%
Thrombocytopenia	4%
Leucopenia	0
Anemia	16%
Paronychia	4%

Table 4: Adverse effects in group II (acitretin).

Effects	Percentage of patients
Nausea/ vomiting	23.5%
Dry lips	88%
Hair fall	17.6%
Skin peeling	11.7%
Photosensitivity	17.6%
Skin dryness	11.7%
Pruritus	23.5%
Serum triglycerides elevation	17.6%
Serum cholesterol elevation	11.7%
Serum VLDL elevation	6%

Table 5: Clinical improvement at end of treatment.

Groups	Percentage of patients showing			
	76-100% imp	51-75% imp	26-50% imp	≤25% imp
I	65%	25%	5%	5%
II	15.5%	69%	15.5%	0

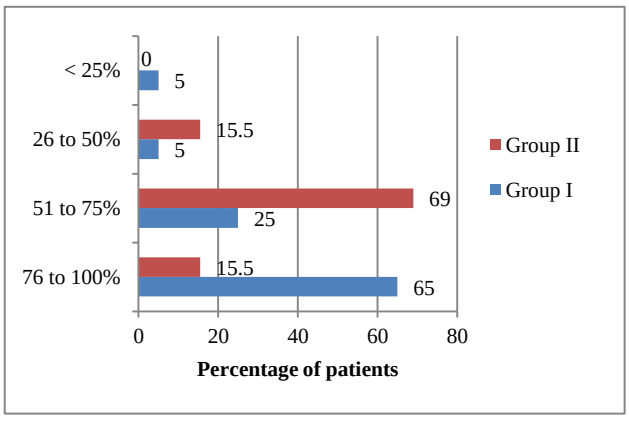

Figure 6: Improvement at end of treatment.

DISCUSSION

In the present study both methotrexate and acitretin were effective in the treatment of moderate and severe type of disabling palmoplantar psoriasis and in the reduction of mean modified PASI scores. The intragroup P values before and after 3 months of treatment were <0.0001 both in group I and group II.

The mean MPASI score reduced from baseline 57.15 ± 17.17 to 14.5 ± 13.55, after the end of 3 months of methotrexate in group I. The mean reduction in MPASI score was 42.5 ± 17.46.

The mean score reduced from baseline 57.76 ± 18.60 to 21.30 ± 8.168, after the end of 3 months of acitretin in group II. The mean reduction in MPASI score was 36.76 ± 14.686.

The mean reduction in MPASI score was more with methotrexate than with acitretin. So oral methotrexate was better than acitretin in MPASI score reduction (Figure 5).

Charles B[15] reported a case series, where a study of 45 patients with mild to moderate palmoplantar psoriasis treated with oral acitretin for 3 months. Results showed that mean PASI score reduced from 11 at baseline to 1.65 at the end of 3 months. 27 patients developed cheilitis and 10 patients showed elevation in triglyceride levels. Finally they concluded that measurable improvement was seen in 100% of patients.

Giovanni et al.[17] reported the efficacy of oral acitretin in 42 patients with hyperkeratotic palmoplantar dermatitis. After 1 month of treatment oral acitretin was significantly better in clearing the lesions (P <0.0001). They advised oral acitretin as the first choice.

With methotrexate more than 75% of improvement was seen in 65% of patients. So totally 90% of patients in group I showed more than 50% improvement. With acitretin more than 75% improvement was seen in 15.5% of patients and more than 50% improvement was seen in 84% of patients (Figure 5).

Adisen et al.[18] reported more than >75% decrease of the disease from baseline was observed in 53% of patients on acitretin and 47% of patients on methotrexate (Table 6).

Table 6: Comparison of previous and present studies.

Studies	Percentage of patients with >75% improvement of MPASI from baseline	
	Methotrexate	Acitretin
Adisen et al.	47%	53%
Present study	65%	15.5%

All patients were happy with the reduction in the symptoms and there was significant improvement in the quality of life at the end of the treatment as assessed through the questionnaire.

Both methotrexate and acitretin are equal both in reduction of modified PASI score and treatment success.

Palmoplantar psoriasis is the hardest type to treat with profound effect on the quality of life of the patient. Palms and soles involvement show greater physical discomfort and disability. Simple routine functions can become physically and psychologically challenging for these patients. Efforts to find effective long term therapeutic options with favorable safety profiles remain an elusive achievement. To date, the topical options have inadequate response. So oral acitretin and methotrexate have shown potential benefits in more than 80% of patients and are good options in the treatment of patients with moderate and severe palmoplantar psoriasis and in significantly improving their quality of life.

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Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Burns T, Breathnach S, Cox N, Griffiths C. Psoriasis. In: Burns T, Breathnach S, Cox N, Griffiths C, eds. Rook's Textbook of Dermatology. 7th ed. US: Blackwell Publishing; 2004.
2. Brunasso AM, Puntoni M, Aberer W, Delfino C, Fancelli L, Massone C. Clinical and epidemiological comparison of patients affected by palmoplantar plaque psoriasis and palmoplantar pustulosis: a case-series study. Br J Dermatol. 2013;168:1243-51.
3. Petty AA, Balkrishnan R, Rapp SR, Fleischer AB, Feldman SR. Patients with palmoplantar psoriasis have more physical disability and discomfort than patients with other forms of psoriasis: implications for clinical practice. J Am Acad Dermatol. 2003;49:271-5.
4. Farley E, Masrour S, McKey J, Menter A. Palmoplantar psoriasis: a phenotypical and clinical review with introduction of a new quality-of-life assessment tool. J Am Acad Dermatol. 2009;60:1024-31.
5. Chung J, Callis Duffin K, Takeshita J, Shin DB, Krueger GG, Robertson AD, et al. Palmoplantar psoriasis is associated with greater impairment of health-related quality of life compared with moderate to severe plaque psoriasis. J Am Acad Dermatol. 2014 Oct;71(4):623-32.
6. Kircik L. Treatment of hand and foot psoriasis with emphasis on efalizumab. Skin Therapy Lett. 2007:12(9):4-7.

7. Camp RDR. PUVA therapy. In: Camp RDR, eds. Textbook of Dermatology. 1st ed. Oxford: Blackwell Publishing; 1992.
8. Weinberg JM. Successful treatment of recalcitrant Palmoplantar psoriasis with etanercept. Cutis. 2003 Nov;72(5):396-8.
9. Mehta BH, Amladi S. Evaluation of topical 0.1% tazarotene cream in the treatment of palmoplantar psoriasis: an observer blinded randomized controlled study. Indian J Dermatol. 2011 Jan-Feb;56(1):40-3.
10. Nikam BP, Amladi S, Wadhwa SL. Acitretin. Indian J Derm Venereol Leprol. 2006;72:167-72.
11. Pilkington T, Brogden RN. Acitretin: a review of its pharmacology and therapeutic use. Drugs. 1992;43:597-627.
12. Kalb RE, Strober B, Weinstein G, Lebwohl M. Methotrexate and psoriasis. J Am Acad Dermatol. 2009;60:5:824-37.
13. Wolverton SE. Methotrexate. In: Jeffrey PC, Carol L, eds. Comprehensive Dermatologic Drug Therapy. 1st ed. Philadelphia: Saunders; 2001: 163-177.
14. Tan J, Maari C, Nigen S, Bolduc C, Bissonnette R. Open-label exploratory study of acitretin for the treatment of severe chronic hand dermatitis. J Dermatolog Treat. 2014 Aug;26:1-3.
15. Charles B, Staff W. Palmoplantar psoriasis responds to retinoid. International Congress on Dermatology, 2009. Available at: http://www.medpagetoday.com/MeetingCoverage/ICD/14392.
16. Ravi BC, Kaur I, Kumar B. Topical methotrexate therapy in palmoplantar psoriasis. Indian J Dermatol Venereol Leprol. 1999;65:270-2.
17. Capella GL1, Fracchiolla C, Frigerio E, Altomare G. A controlled study of comparative efficacy of oral retinoids and topical betamethasone/salicylic acid for chronic hyperkeratotic palmoplantar dermatitis. J Dermatolog Treat. 2004;15(2):88-93.
18. Adisen E, Tekin O, Gulekon A, Gurer M. A retrospective analysis of treatment responses of palmoplantar psoriasis in 114 patients. J Eur Acad Dermatol Venereol. 2009;23(7):814-9.

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