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**ORIGINAL RESEARCH**

# Efficacy of methotrexate and acitretin in cases of psoriasis

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**Abstract**
**Background:** Psoriasis is a systemic immune-mediated disease accompanied by arthritis in a significant percentage of patients called psoriatic arthritis. The present study was conducted to compare methotrexate and acitretin in cases of psoriasis.
Materials & Methods: 80 patients of palmoplantar psoriasis of both genders were divided into 2 groups of 40 each. Group I patients were given oral acitretin 0.5mg/kg daily for 3 months and group II were given oral methotrexate15mg/week for 3 months. Modified psoriasis area severity index (MPASI) score was recorded. Improvement was graded as: no change, slight improvement, moderate, marked and almost cleared.
**Results:** There were 15 males and 25 females in group I and 20 males and 20 females in group II. The mean MASI score at baseline, 1 month, 2 months and 3 months was in group I was 61.2, 41.4, 31.2 and 21.6 and in group II was 58.4, 39.2, 24.5 and 15.4. The difference was significant ($P< 0.05$).
**Conclusion:** Both oral methotrexate and acitretin were highly effective in treating palmoplantar psoriasis. The reduction of Psoriasis lesions with Oral methotrexate was faster than acitretin.
**Key words:** Acitretin, psoriasis, methotrexate

## Introduction

Psoriasis is a systemic immune-mediated disease accompanied by arthritis in a significant percentage of patients called psoriatic arthritis.[1] Psoriasis has a substantial influence on health-related quality of life that is comparable to that of other serious medical conditions e.g. cancer, heart disease, diabetes and depression.[2]
Various types of psoriasis are described. Among them palmoplantar psoriasis affecting palms and soles is very resistant to treatment. 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. Because of the recalcitrant nature, easy visibility and location on functionally exposed parts, the condition can lead to disability and significant psychological effects in many patients.[3]
Many patients with palmoplantar psoriasis do not have psoriasis of other parts of their body. Diagnosis of psoriasis is usually clinical. Treatment of palmoplantar psoriasis is very demanding and challenging to the physician.[4] The physical quality of life index is severely

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impaired with this type and with successful treatment there is significant improvement in quality of life.[5]Therapy for palmoplantar psoriasis usually consists of topical medications with or without occlusion, coal tar, PUVA therapy, systemic retinoids, and methotrexate or cyclosporine. Existing topical treatments are ineffective and show unpredictable response. So other systemic can be used for patients with disability or added to the regimen of those who have failed topical therapy. Acitretin is a vitamin A derivative and is approved for the treatment of palmoplantar psoriasis.[6]The present study was conducted to compare methotrexate and acitretin in cases of psoriasis.

## Materials & methods

The present study consisted of 80patients of palmoplantar psoriasis of both genders. All selected patients were informed regarding the study and their written consent was obtained in vernacular language after explaining usefulness of the study.

Demographic profile such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 40 each. Group I patients were givenoral acitretin 0.5mg/kg daily for 3 months and group II were given oral methotrexate15mg/week for 3 months. Modified psoriasis area severity index (MPASI) score was recorded. Improvement was graded as: no change, slight improvement, moderate, marked and almost cleared.Follow up of cases was done. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

## Results

**Table I Distribution of patients**

| Groups | Group I | Group II |
|---|---|---|
| Agent | Oral 0.5mg/kg acitretin | Oral 15mgmethotrexate |
| M:F | 15:25 | 20:20 |

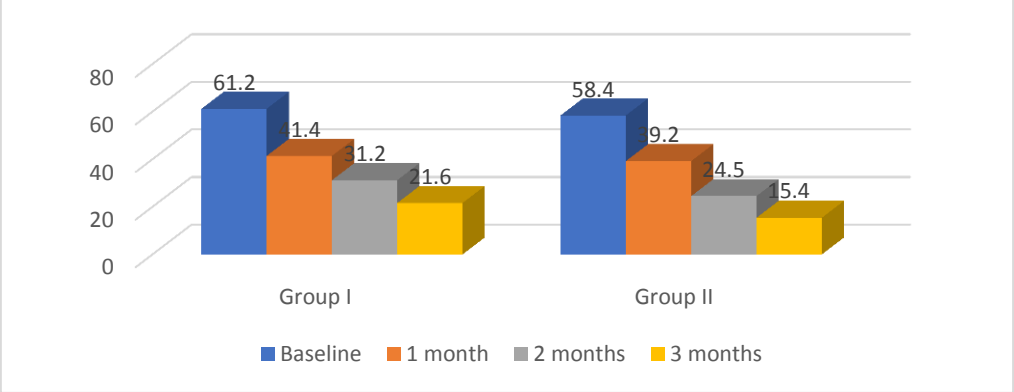
Table I shows that there were 15 males and 25 females in group I and 20 males and 20 females in group II.

**Table II Assessment of MASI score in both groups**

| Groups | Baseline | 1 month | 2 months | 3 months | P value |
|---|---|---|---|---|---|
| Group I | 61.2 | 41.4 | 31.2 | 21.6 | 0.05 |
| Group II | 58.4 | 39.2 | 24.5 | 15.4 | 0.02 |
| P value | 0.91 | 0.82 | 0.04 | 0.01 | |

Table II, graph I shows that mean MASI score at baseline, 1 month, 2 months and 3 months was in group I was 61.2, 41.4, 31.2 and 21.6 and in group II was 58.4, 39.2, 24.5 and 15.4. The difference was significant (P< 0.05).

**Graph I Assessment of MASI score in both groups**



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**Discussion**

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.[7,8] It is a chronic inflammatory skin disease characterized by a prominent T-cell infiltrate, epidermal hyper proliferation and abnormal keratinocyte differentiation (parakeratosis), infiltration of many different leukocytes and increased vascularity in the dermis.[8]The present study was conducted to compare methotrexate and acitretin in cases of psoriasis.

We found that there were 15 males and 25 females in group I and 20 males and 20 females in group II. Karn et al[9] compared the efficacy of methotrexate and cyclosporine in the treatment of Psoriasis. 64 patients were divided into 2 groups, 33 receiving MTX and 31 receiving CsA. These patients were followed every week for first month and their PASI score and side effects were recorded at 0, 1st, 2nd and 3rd month. The mean PASI score at base line was 23.34 ± 1.12 for MTX and 21.25 ± 1.07 for CsA group. After 12 weeks of treatment the mean ± S.E PASI score found to be 5.37 ± 0.42 for MTX and 4.56 ± 0.41 for CsA group. The difference in the response between the groups acquired statistically not significance meaning there is no difference in the effectiveness of MTX and CsA.

Charles B[10] 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.

We found that mean MASI score at baseline, 1 month, 2 months and 3 months was in group I was 61.2, 41.4, 31.2 and 21.6 and in group II was 58.4, 39.2, 24.5 and 15.4. An J et al[11] assessed effectiveness of combination therapy for psoriasis vulgaris, and the potential benefit as well as side effect during the treatment. 39 patients with psoriasis vulgaris were treated with acitretin, methotrexate or their combination or as control. Similarly, K14-VEGF transgenic psoriasis-like mice were treated with these drugs. Human primary keratinocytes and hepatic stellate cells were used for analyzing their effect in vitro. The results showed that the combination therapy exhibited higher effectiveness in remitting skin lesion, but did not significantly affect the liver function of both patients and mice. Moreover, the combination groups showed less elevation of profibrotic factors in sera when compared with methotrexate alone groups accordingly. It was found that primary keratinocytes expressed more involucrin as well as loricrin and proliferated more slowly on the combined stimulation. Such combination treatment induced lower expression of profibrotic factors in hepatic stellate cells. In conclusion, the acitretin-methotrexate combination therapy for psoriasis vulgaris can achieve higher effectiveness and result in less liver fibrosis.

Parsam et al[12]included 50 patients with palmoplantar psoriasis who 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 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.Giovanni et al[13]reported the efficacy of oral acitretin in42 patients with hyperkeratotic palmoplantar dermatitis.After 1 month of treatment oral acitretin was

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significantlybetter in clearing the lesions (P <0.0001). They advisedoral acitretin as the first choice.
The shortcoming of the study is small sample size and short follow up.

**Conclusion**

Authors found that both oral methotrexate and acitretin were highly effective in treating palmoplantar psoriasis. The reduction of Psoriasis lesions with Oral methotrexate was faster than acitretin.

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