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Comparative Study Of The Efficacy Of Various Topical Treatment Modalities In Palmoplantar Psoriasis

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Abstract

Introduction: Psoriasis is a common, genetically determined, inflammatory, and proliferative disease of the skin. The most characteristic lesions consist of red, scaly, sharply demarcated, indurated plaques present particularly on the elbows, knees, lower back, extensor surfaces, and scalp. Even though several treatment modalities are available, psoriasis continues to be a therapeutic challenge despite our growing knowledge of its pathogenesis. Palmoplantar psoriasis is a chronic disease with remissions and exacerbations. Most of the topical therapies currently available for psoriasis are either suited for short-term therapy or long term maintenance therapy. Furthermore topical corticosteroids commonly used for palmoplantar psoriasis, show diminished response on continuous use due to tachyphylaxis and more incidence of recurrence.

Aim Of The Study: To compare the efficacy of various topical therapies like Short contact compound dithranol ointment (dithranol 1.15%, salicylic acid 1.15%, coal tar solution 5.3% in white soft paraffin) Topical 0.1% Betamethasone valerate ointment Topical tazarotene 0.05% gel Topical PUVA using -1% methoxy psoralen solution Liquid paraffin.

Methods: 100 patients in the year 2020 who attended the psoriasis outpatient clinic at the Department Of Dermatology& Venereology, Government Mohan Kumara Manglam Medical College, Salem were included in the study. The diagnosis was made on clinical grounds and histopathological examination.

Results: placebo and dithranol were 3.3, 3.2, 3.3, 3.1, and 3.2 respectively. At 4 weeks of treatment, the mean pasi scores in 5 groups were 2.6, 2.8, 2.8, 2.6, and 2.7 respectively. At the end of the 6^{th} and 12^{th} weeks, there was a substantial reduction in the mean pasi scores for all the groups. In the steroid group, there was an increase in pasi score between the 4^{th} and 6^{th} week, and thereafter reduction was observed up to the end of the 24^{th} week. At the end of the 24^{th} week, the tazarotene and pull groups showed a sustained reduction in pasi scores to 0.51 & 0.69 respectively. The other three groups showed a moderate reduction in pasi scores between 1.14 and 1.67.

Conclusion: Topical therapies are the first-line therapeutic strategy in the treatment of localized palmoplantar psoriasis and can be made effective when the appropriate drugs were used judiciously. Among the five modalities compared in this study, tazarotene (0.05%) gel may be considered an initial treatment of choice. Topical PUVA is as effective as tazarotene except for the limiting factors for PUVA therapy such as availability of PUVA unit, patient compliance, and long term side effects. Topical dithranol is as effective as topical PUVA when used as 20minutes short contact therapy. Topical 0.1% Betamethasone valerate was moderately effective with frequent exacerbation. Liquid paraffin was the least effective with no adverse effects, no exacerbation, and remissions. However, it can be used as an adjunct to other topical therapies.

Keywords: palmoplantar psoriasis, betamethasone valerate ointment, tazarotene (0.05%) gel, pasi score

Introduction

Introduction: Psoriasis is a common, genetically determined, inflammatory, and proliferative disease of the skin. The most characteristic lesions consist of red, scaly, sharply demarcated, indurated plaques present particularly on the elbows, knees, lower back, extensor surfaces, and scalp. [1]The first recognizable description of psoriasis is attributed to Celsus (25BC-45AD) in his de re medica nearly 2000 years ago.[2] The disease was described under the heading of impetigo from the Latin word imperator which means "to attack or rush on" Galen was the first to use the word psoriasis from the Greek word 'psora' which means 'to itch'. Psoriasis and Leprosy were grouped for centuries.[3] Willan was the first to accurately describe psoriasis and its various manifestations in 1809, but he did not separate it with certainty from Leprosy. [4]In 1841, Hebra definitively distinguished the clinical picture of psoriasis from that of Hansen's disease. Eventhough several treatment modalities are available, psoriasis continues to be a therapeutic challenge despite our growing knowledge of its pathogenesis. [5]Palmo plantar psoriasis is one of the types of psoriasis which can occur alone or along with the involvement of other areas. In most cases, the lesions are well defined but they are less scaly and the surface often shows fissures. It may be pustular or non pustular[6].Three forms of lesions can occur in palms and soles. Diffuse hyperkeratotic plaques, Erythematous patches or plaques studded with minute superficial pustules, Discrete scaly plaques or patches, Rarely Rupioid Lesions can occur on the soles with characteristic limpet-like scales.[7] In this study, various topical modalities of treatment are used for palmoplantar psoriasis-like 0.1% Betamethasone valerate ointment 0.05% Tazarotene gel Topical PUVA using methoxy psoralen solution 1%.[8] Short contact compound dithranol point (dithranol 1.15%, salicylic acid 1.15%, coal tar 5.3% in white soft paraffin)Liquid paraffin. There are numerous topical therapies available like coaltar, anthralin, methotrexate, vitamin D analogs tacrolimus, salicylic acid 2 - 10%. emollients, etc.[9,10]

Methods: 100 patients in the year 2020 who attended the psoriasis outpatient clinic at the Department Of Dermatology& Venereology, Government Mohan Kumara Manglam Medical College, Salem were included in the study. The diagnosis was made on clinical grounds and histopathological.

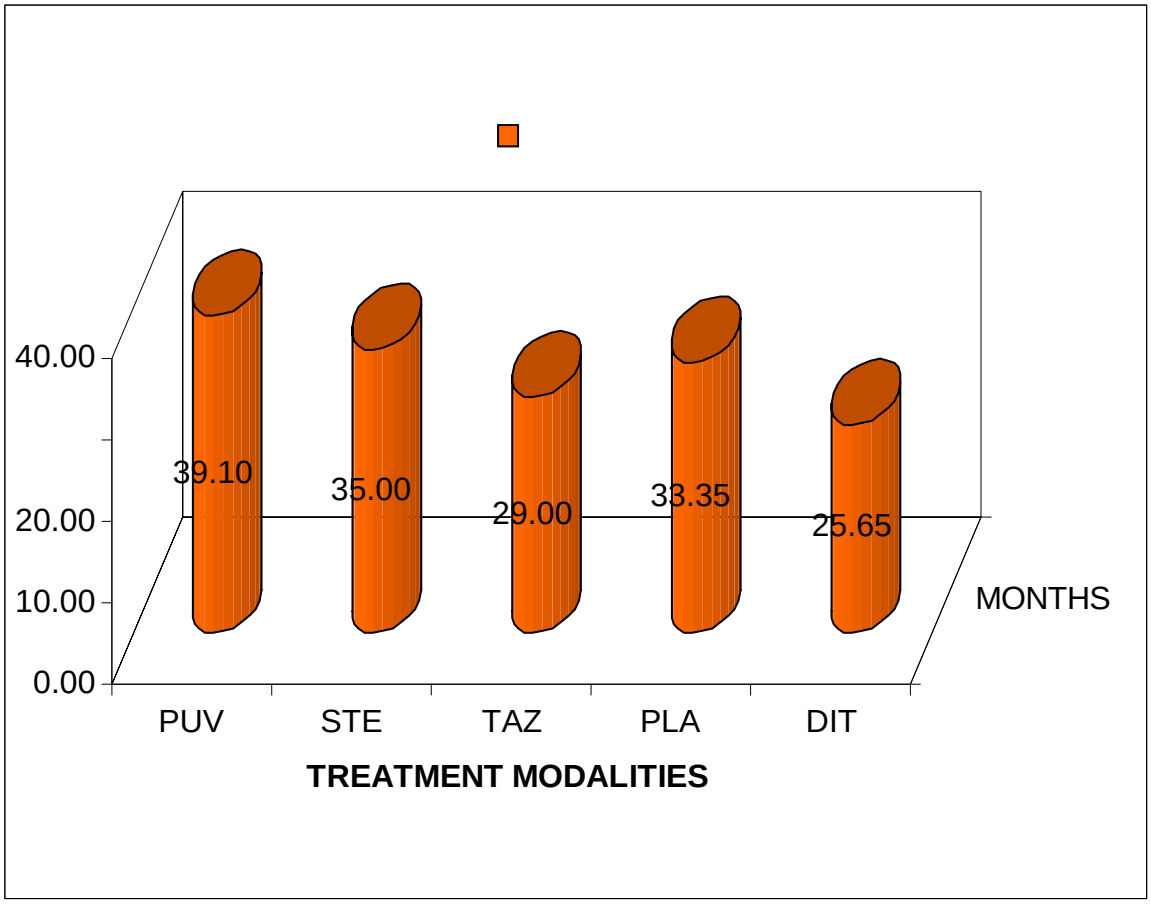
Inclusion Criteria: Patients With Stable Palmoplantar Psoriasis, Patients Who Have Not Used Other Forms Of Topical Therapy During The Previous 4 Weeks. For Topical PUVA Therapy Age Of More Than 18years Was Considered.

Exclusion Criteria: Palmoplantar psoriasis along with other body surface area involvement. Pregnancy and lactation, Unwillingness to give consent for return for weekly evaluation. Patients who have had other forms of therapy during the previous 4 weeks.100 patients were randomly allocated to 5 groups (20 patients each) to receive topical 0.1% betamethasone valerate, 0.05% tazarotene, short contact compound dithranol, topical PUVA, and liquid paraffin respectively. Topical 0.1% betamethasone valerate was applied twice daily.0.05% tazarotene was applied once a day at bedtime. Short contact compound dithranol was used for 20 minutes once a day. Topical PUVA was given thrice weekly after applying 1% methoxy psoralen. Liquid paraffin was used three times daily. Severity and extent of psoriasis were evaluated at pretreatment baseline (Day 0) and then at weekly intervals for 4 weeks, followed fortnightly for 12 weeks, followed by monthly intervals up to 24 weeks using "Psoriasis Area and Severity Index" (PASI). Severity of erythema (E), Desquamation (D), and Induration (I) were recorded on a 5-point scale as follows. At each weekly visit, the patients were asked about complaints and adverse effects like itching or burning sensation in lesional or perilesional skin. Patients were also examined for perilesional erythema.

Results

The mean age in this study was 43.35. The range was from 10 to 85 years. In patients chosen for steroids and dithranol, the males and females were equal, whereas for placebo and tazarotene males outnumbered females and for PUVA, females outnumbered males. The overall male to female ratio was 52:48. The mean duration of psoriasis among the patients was in the range of 39.11 and 25.65 months. There was no exacerbating factor for 86% of the study group. Among the most common exacerbating factor, stress, cold, and menopause, 9% was for stress and 3% & 2% was for cold and menopause respectively.

Graph :1 duration of psoriasis



Family history of psoriasis was present among 3% of total patients, 1% each in placebo, tazarotene, dithranol groups, and none in the PUVA and steroid groups. NAIL CHANGES:46% had no nail changes. Among the others 23% had ridging, 21% had pitted, 3% had onycholysis, 4% pitting, and ridging, and 3% had onycholysis and ridging. FOCAL SEPSIS:17% had evidence of focal sepsis in the ear, nose, and throat and dental sepsis in the form of gingivitis, which was treated before the onset of therapy. PASI REDUCTION: depicts the reduction in the PASI scores obtained in the 5 groups at 0,4,8,12 and 24 weeks.

Fig.2 Pasi Reduction

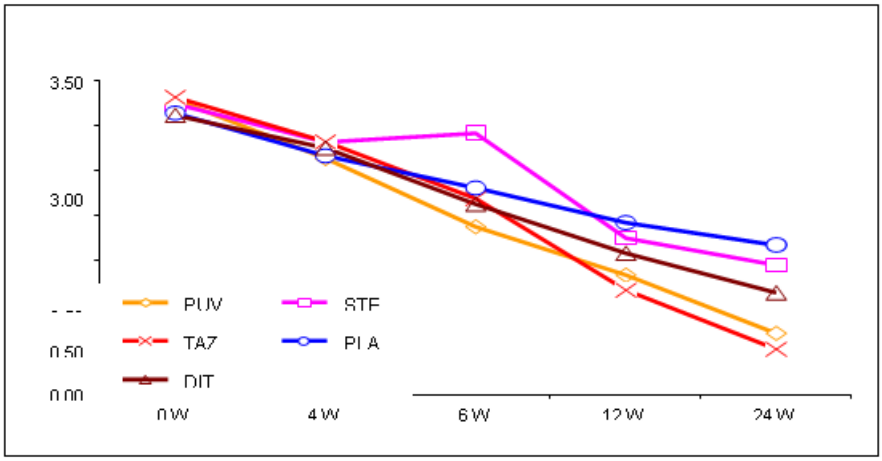
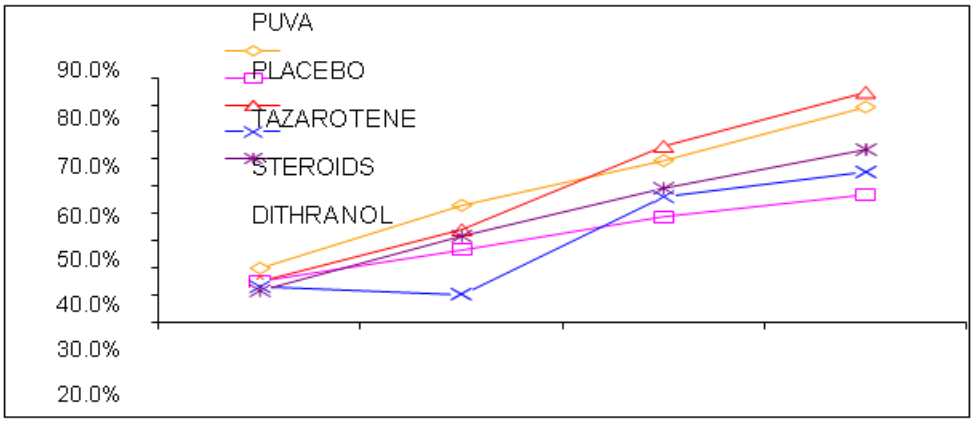


Fig. 3 Pasi Percentage Reduction



Graph:2 &3 From the graph, the mean baseline PASI scores in the PUVA, steroid, tazarotene, placebo, and dithranol were 3.3, 3.2, 3.3, 3.1, and 3.2 respectively. At 4 weeks of treatment, the mean PASI scores in 5 groups were 2.6, 2.8, 2.8, 2.6, and 2.7 respectively. At the end of the 6th and 12th weeks, there was a substantial reduction in the mean PASI scores for all the groups. In the steroid group, there was an increase in PASI score between the 4th and 6th week, and thereafter reduction was observed up to the end of the 24th week. At the end of the 24th week, the tazarotene and PUVA groups showed a sustained reduction in PASI scores to 0.51 & 0.69 respectively. The other three groups showed a moderate reduction in PASI scores between 1.14 and 1.67. PASI scores in all the 5 groups at 4,8, 12 & 24th week. At the end of the 24th week, there was an 84.66% reduction in PASI for the tazarotene group followed by PUVA with 79.17%, dithranol with 63.46%, an asteroid with 55.38%, and placebo with 46.94%. Adverse effects were found in all the groups except placebo. During the 4th to 6th week of treatment, 25% of patients in the steroid group showed exacerbation in the form of erythema. 15% of patients in the tazarotene group showed a form of dryness and pruritus. 15% of patients in the PUVA group showed the form of an erythema, polymorphic light eruption, burning sensation. 15% of patients in the dithranol group showed the form of burning sensation and pigmentation.

Discussion

The study has shown that the mean age of the patients was 43.35 ranging from 10 to 85 years. The sex ratio was 52% male and 48% female. The various exacerbating factors in this study in descending order were stress, cold weather, and menopause.[11] Topical therapies like short contact compound dithranol, 0.1 % Betamethasone valerate, topical PUVA, 0.05 % tazarotene, and liquid paraffin were used and reduction in PASI was assessed at every 4th, 6th, 12th & 24th weeks. Previous study on the topic "Management of topical modalities of psoriasis with special reference to Tazarotene by Kar PK reported 50% of improvement by applying Tazarotene gel 0.05% twice daily at the end of 6weeks.In this study, treatment made with the same 0.05% of Tazarotene gel once a day showed a maximum percentage reduction in PASI at the end of the 8th, 12th and 24th weeks was 34.14%, 64.81%, and 84.66% respectively. [12]Maximum improvement was observed between the 12th and 24th weeks. There was excellent compliance among the patients in this group and there were no defaulters.[13] Patients also had minimal adverse effects like irritation, erythema, dryness, and pruritus. In this study PUVA group showed the second-best efficacy after the tazarotene group showing a maximum reduction in PASI of 79.17% at the end of 24 weeks as evidenced by flattening of plaques, decreased scaling, and erythema .[14]This was consistent with the previous study conducted with topical application of methoxy psoralen plus UVA in which 67% of patients responded with considerable improvement.15% of the patient had adverse effects in the form of polymorphic light eruption, erythema and burning sensation at the exposed areas. Except for 4 defaulters, there was good compliance among the patients. In this group, the percentage improvement in PASI was found to be 63.46% at the end of 24 weeks. The study was consistent with the study conducted in the UK by Gottlieb in which complete

clearance of lesions was reported in 75% of the patients at the end of 24 weeks.[15] There was also good compliance in this group with no defaulters, however, some adverse effects in the form of burning sensation and pigmentation were seen. However, when the contact period was reduced to 10minutes the adverse effects were reduced significantly.[16] The steroid group showed moderate efficacy with 55.38% improvement in PASI at the end of 24 weeks. However, there was no specific study reported using 0.1% betamethasone valerate.[17] There was good compliance among the patients with no defaulters. Few side effects like erythema and exacerbation were observed in some patients. In this group application of liquid paraffin showed a 46.94% reduction of PASI at the end of 24weeks.[18] There was good compliance among this group with no defaulters and no adverse effects. The previous study has reported that the use of liquid paraffin in palmoplantar psoriasis relieved the feeling of dryness and pruritus. There was no specific improvement or deterioration of the disease.[19,20]

Conclusion

Topical therapies are the first-line therapeutic strategy in the treatment of localized palmoplantar psoriasis and can be made effective when the appropriate drugs were used judiciously. Among the five modalities compared in this study, tazarotene (0.05%) gel may be considered an initial treatment of choice. Topical PUVA is as effective as tazarotene except for the limiting factors for PUVA therapy such as availability of PUVA unit, patient compliance, and long term side effects. Topical dithranol is as effective as topical PUVA when used as 20minutes short contact therapy. Topical 0.1% Betamethasone valerate was moderately effective with frequent exacerbation. Liquid paraffin was the least effective with no adverse effects, no exacerbation, and remissions. However, it can be used as an adjunct to other topical therapies.

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