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Original Research

Topical psoralen plus ultraviolet-A therapy might be considered a current option for palmoplantar dermatoses, especially pustulosis

PUVA in palmoplantar dermatoses

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Abstract

Aim: Topical psoralen plus ultraviolet-A therapy (PUVA) is one of the commonly used treatment modalities in dermatology for palmoplantar dermatoses. Topical PUVA therapy is frequently preferred especially in palmoplantar dermatoses as it has fewer side effects than oral PUVA treatment. Our study aimed to evaluate the effectiveness of PUVA treatment in palmoplantar dermatoses.

Methods: The study included 91 patients who received topical PUVA treatment in our hospital between 2010 and 2022. Patients were treated with topical PUVA therapy for 2-3 sessions per week and their treatment responses were evaluated. Descriptive statistics were expressed as number, percentage, median, and minimum-maximum, where appropriate. The chi-square test was used to evaluate categorical data.

Results: The treatment response of the palmoplantar pustulosis group was found to be significantly higher compared to the palmoplantar psoriasis and eczema group. Transient erythema was observed as the most common side effect.

Conclusion: Topical PUVA therapy is a reliable and safe treatment method in palmoplantar dermatoses, especially in palmoplantar pustulosis patients.

Keywords

palmoplantar dermatosis, pustulosis, psoralen, ultraviolet-a

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Introduction

Topical psoralen plus ultraviolet A (PUVA) therapy is a widely used treatment option in dermatologic diseases. Psoralen substances absorb ultraviolet radiation and cause changes in DNA functions by photochemical reaction.[1-3] Although its mechanism of action is not fully known, it is thought that PUVA inhibits keratinocyte proliferation and causes immunosuppression by inhibiting cytokine and chemokine release.[4-6] Topical PUVA therapy is frequently preferred especially in palmoplantar dermatoses as it has fewer side effects than oral PUVA treatment. Treatment indications include psoriasis, eczema, mycosis fungoides, pustular dermatoses, and vitiligo.[7] Hyperkeratotic and dyshidrotic eczema, palmoplantar psoriasis, and palmoplantar pustular dermatoses are among the dermatological diseases in which topical PUVA therapy is most frequently used.[8,9] In the literature, the studies on the efficacy of topical PUVA therapy are limited in number. The present study aimed to evaluate the demographic data and treatment responses of patients who received topical PUVA therapy.

Materials and Methods

This retrospective study included 190 patients who received topical PUVA therapy between 2010 and 2022 in the dermatology department of our faculty. A total of 91 patients with complete follow-up information were included in the study. Patients who discontinued the treatment and those who did not come to regular follow-ups were excluded. All patients continued topical PUVA therapy for 2 or 3 sessions per week. The patients received a dose of UVA for 20-30 minutes after the application of topical 0.1% 8-methoxy psoralen gel to the affected area. Demographic characteristics and treatment responses of the patients were retrieved from the patient's medical charts. The treatment responses of the patients were assessed by the percentage of regression of the lesions and were classified as follows: 1) moderate response (MR) indicating a percentage of regression between 25% and 75% (including 25%), 2) satisfactory response (SR) indicating a percentage of regression above 75% (including 75%).

Ethical Approval

This study was approved by the Ethics Committee of İstanbul University Cerrahpasa (Date: 10.10.2023, No: 805817).

Statistical Analysis

The IBM SPSS Statistics for Windows Version 25.0 (IBM Corp., Armonk, NY, USA) was used for statistical analysis. Descriptive statistics were expressed as number, percentage, median, and minimum-maximum, where appropriate. The chi-square test was used to evaluate categorical data. A p-value of less than 0.05 was accepted as significant.

Reporting Guidelines

This study was reported in accordance with the STROBE guideline.

Results

A total of 91 patients (56% male) with a median age of 47 years (range, 27 to 74 years) were included. The demographic characteristics of the patients participating in the study are shown in Table 1. Of the patients, 53 (58.2%) were diagnosed with chronic palmoplantar eczema, 24 (26.4%) were diagnosed with palmoplantar psoriasis, and 14 (15.4%) were diagnosed with palmoplantar pustulosis. Thirty-eight (41.8%) patients had Fitzpatrick type 2 skin type, while 53 (58.2%) patients had Fitzpatrick type 3 skin type. The accompanying chronic diseases of the patients are presented in Table 2. The median number of phototherapy sessions was 25 (range, 20-35). All patients in the study responded to the treatment at rates ranging from 40 to 90%. While the treatment response of 33 (36.3%) patients was moderate, the response was satisfactory in 58 (63.7%) patients. The treatment responses of the patients according to the diagnosis are summarized in Table 3. Clinical photographs of some patients before and after phototherapy are shown in Figure 1 and Figure 2. The treatment response of the palmoplantar pustulosis group was found to be significantly higher than that of the palmoplantar psoriasis and eczema groups (p=0.048). As local side effects of PUVA therapy, transient erythema and/or pruritus in the treatment area were observed in 51 patients. Transient erythema, the most common side effect of PUVA therapy, was recorded in 30 patients. Regarding systemic side effects, only one patient complained of nausea during the treatment.

Discussion

Topical PUVA is a frequently preferred phototherapy especially in localized dermatoses due to its ease of application. The efficacy of topical PUVA has been evaluated in a limited number of studies. It has been evaluated as a safe treatment method when applied with appropriate doses. In a study performed by Carrascosa et al.[10]

Table 1. *Demographical and clinical features of the study patients*

Characteristics	N (%)
Age, median (min-max), y	47 (27-74)
Sex, n (%)	
Female	40 (44.0)
Male	51 (56.0)
Fitzpatrick skin phenotype, n (%)	
2	38 (41.8)
3	53 (58.2)
Diagnosis, n (%)	
Palmoplantar eczema	53 (58.2)
Palmoplantar psoriasis	24 (26.4)
Palmoplantar pustulosis	14 (15.4)
Number of sessions, median (min-max)	25 (20-35)
Regression percentage (%), median (min-max)	75 (40-90)

**min: minimum, max: maximum*

Table 2. *Comorbidities of patients*

Comorbidity	N (%)
Hypertension	15 (16.5)
Diabetes mellitus	9 (9.9)
Fibromyalgia	6 (6.6)
Thyroid disease	5 (5.5)
Osteoporosis	3 (3.3)
Arrhythmia	2 (2.2)
Cancer	2 (2.2)
Migraine	1 (1.1)

Table 3. *Treatment responses of the patients according to the diagnosis*

Diagnosis	Palmoplantar			*P** value
	Eczema	Psoriasis	Pustulosis	
Regression percentage				
MR (25-75%)	22	10	1	.048
SR (≥%75)	31	14	13	

*MR, moderate response; SR, satisfactory response; *Pearson chi-square*

topical PUVA treatment was given to 48 patients with a diagnosis of palmoplantar psoriasis. At the end of the study, 63% of the patients who received only topical PUVA had a good response to treatment. The most common adverse event in that study was transient erythema, occurring in only 18% of the patients.[10] Similarly, in our study, 58% of the patients with palmoplantar psoriasis had a satisfactory response to the treatment, and the most common side effect was transient erythema. In another study conducted in patients with palmoplantar psoriasis, similar to our results, the effectiveness of topical PUVA therapy was 65%.[11]

In the study by Grundman-Kollmann et al.[12] topical PUVA therapy was compared with bath-PUVA therapy in patients with palmoplantar psoriasis and palmoplantar eczema. While the response to topical PUVA treatment was 50% in patients with palmoplantar psoriasis, it was 75% in the palmoplantar eczema group. In that study, no severe side effect was reported with topical PUVA therapy except mild transient erythema.[12] In our study, the mean response to topical PUVA therapy of the patients was 69.5% and 69.6% in patients with palmoplantar psoriasis and chronic palmoplantar eczema, respectively.

In another study, topical PUVA therapy was applied to 22 patients with a diagnosis of palmoplantar pustulosis and palmoplantar psoriasis.[13] While the treatment response was evaluated as good in half of the patients, complete or almost complete regression of the lesions was observed in only 4 patients after 12 weeks of follow-up.[13] In that study, similar to the findings of our study, the most common side effect was reported as transient erythema.[13]

In another study of 27 patients with a diagnosis of palmoplantar pustulosis, topical PUVA was compared with placebo, and although regression was observed in the lesions in patients receiving topical PUVA, no significant difference was observed compared to placebo.[8] In our study, treatment response was satisfactory (75% and above) in 92% of patients with palmoplantar pustulosis, and the treatment response was significantly higher compared to palmoplantar psoriasis and chronic eczema patients. In a study conducted by Riad et al.[14] three sessions of topical PUVA therapy per week were applied to patients with a diagnosis of palmoplantar pustulosis for an average of 13 weeks. At the end of the treatment, a percent regression of 75% or more was observed in 46.7% of the patients.[14]

In another study, topical PUVA was given to patients with the diagnosis of palmoplantar psoriasis, palmoplantar pustulosis, and chronic palmoplantar eczema. In the patients with palmoplantar psoriasis, a regression of 50% or more was observed in 64% of the patients with palmoplantar psoriasis and in 65% of patients with chronic palmoplantar eczema.

However, the regression percentage was less than 50% in all patients with palmoplantar pustulosis.[15] Unlike these studies, in the present study, a satisfactory response to topical PUVA in the patients with palmoplantar pustulosis was 92%, and the response was significantly higher than that in other palmoplantar dermatoses.

Limitations

The present study has also some limitations which can be considered as its retrospective study design and lack of clinical photographs of the patients; on the other hand, including a large series of patients is the strength of the study.

Conclusion

In the present study, topical PUVA was shown to be an effective treatment option in patients with palmoplantar eczema, palmoplantar psoriasis, and pustulosis, particularly being more effective in patients with palmoplantar pustulosis as compared with the findings of the previous studies.

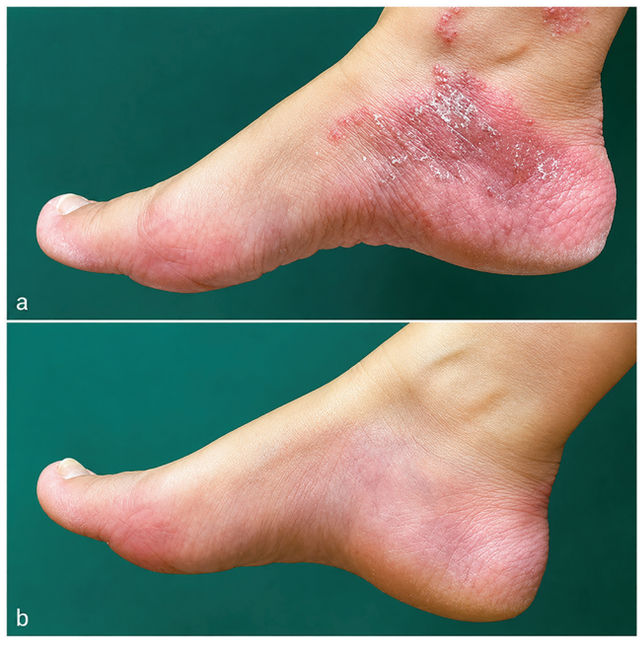

Figure 1. *a. Palmoplantar pustular psoriasis patient before topical PUVA treatment b. Same patient after 25 session of topical PUVA with %70 regression of lesions*

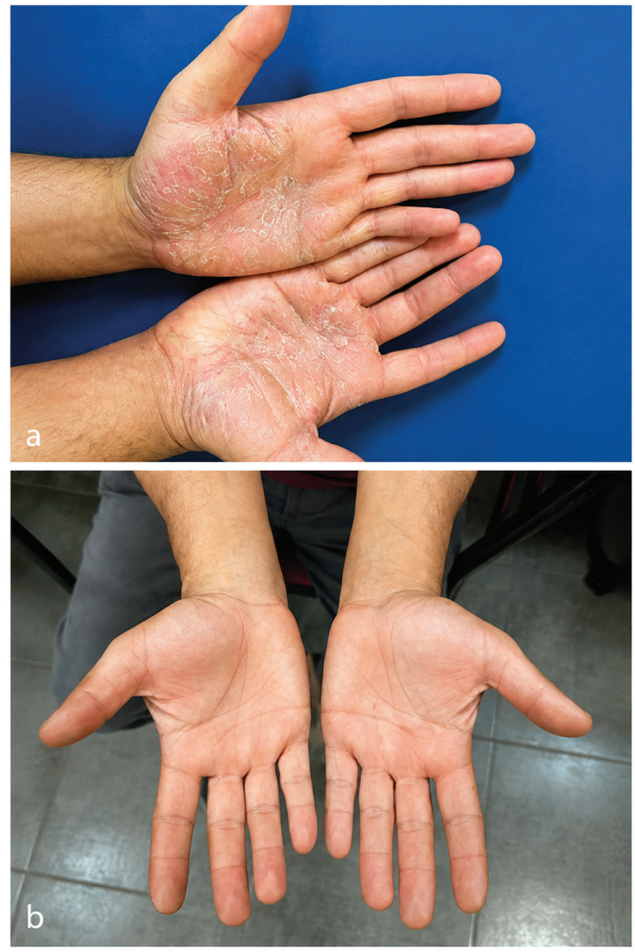

Figure 2. *a.Palmar pustulosis patient before topical PUVA treatment. b. Same patient after 30 session of topical PUVA with almost complete regression of lesion*

Declarations

Animal and Human Rights Statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent

Informed consent was waived by the Ethics Committee due to the retrospective design of the study.

Data Availability

The datasets used and/or analyzed during the current study are not publicly available due to patient privacy reasons but are available from the corresponding author on reasonable request.

Conflict of Interest

The authors declare that there is no conflict of interest.

Funding

None.

Abbreviations

PUVA: Psoralen plus ultraviolet a
UVA: Ultraviolet a

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