

Bath PUVA in the Treatment of Palmoplantar Psoriasis

MA WAHAB^a, MN AMIN^b, MAL KHAN^c, MS HASAN^d

Summary:

During the period of May 2000 to April 2005 a total of 50 cases (30 male and 20 female) of 20 to 50 years age groups were studied at the Department of Dermatology & Venereology, Combined Military Hospital (CMH), Dhaka Cantonment, Dhaka with different types and grades of palmoplantar psoriasis (PPPS) (Noble classification) to evaluate the efficacy of bath PUVA in the treatment of palmoplantar psoriasis. Diagnosis was based on clinical

suspicion and confirmed by histopathological examination of lesional skin. Bath PUVA was given thrice in a week initially and then twice and once in a week according to the response of the patient.

Amelioration of symptoms in different degrees were observed in mild 62%, moderate 50% and severe cases 25%. It appears that bath PUVA is safer and effective in mild and moderate cases of PPPS if treated earlier.

(J Bangladesh Coll Phys Surg 2006; 24: 14-18)

Introduction:

Palmoplantar psoriasis (PPPS) is a chronic, recurring inflammatory disease of the skin, the course of which is unpredictable and the prognosis is also variable. Psoriasis of palms and soles may occur by itself with no evidence of psoriasis or be a part of typical psoriasis. According to our knowledge there is no exact data available about the incidence of PPPS. Palms and/or soles are involved in 10% to 21.1% of all psoriasis cases¹. In Bangladesh no study on the issue was done earlier. The natural course of the disease varies from mild symptoms to severe disability. The etiology of PPPS has not yet been well elucidated. Genetic predisposition, environmental factors and immunological aspect are well considered for the main causes of the disease. But trauma, infection, emotional problems, drugs like NSAIDs, beta blockers, barbiturate, lithium, antimalarials, sulphonamides, hormones, metal allergens etc. all are considered to be provoking factor for the initiation of the disease process^{2,3,4}.

Psoralen (p) plus long wave ultraviolet radiation (UVA) is the photochemical interaction between

psoralen and ultraviolet A (320-400 nm) radiation that brings about a therapeutically beneficial result not produced either by the drugs or radiation alone⁵. Photochemotherapy (topical, bath and systemic PUVA) can control the disease and sometimes gives a prolonged remission to a number of dermatological conditions^{6,7,8}. The present study was undertaken with a view to find out the efficacy of bath PUVA in the treatment of PPPS.

Materials and methods:

A prospective study was done to see the effectiveness of bath PUVA in the treatment of palmoplantar psoriasis. The study was conducted among 50 cases of PPPS aged 20 to 50 years in the Department of Dermatology & Venereology, CMH, Dhaka Cantonment, Dhaka during May 2000 to April 2005 including two years follow up. The patients were enrolled between May 2000 to April 2003. The samples were selected purposively. Cases having only palms and soles involvement were included. Most of the cases were admitted in the hospital and a few cases were treated as outdoor patients. All the patients had been unresponsive to treatment with topical application of potent steroid, 20% urea cream, 10% salicylic acid and emollients. Improvement was noted on the basis of erythema, induration and desquamation.

Diagnosis of the cases was based on history, clinical findings and confirmed by histopathological study. Routine laboratory investigations were done to exclude other similar diseases coming under differential diagnosis like tinea, contact dermatitis,

- Lt. Col (Dr.) Md. Abdul Wahab, MBBS, DDV, MCPS, FCPS, Senior Classified Specialist in Dermatology & Venereology, Skin Department, CMH, Dhaka Cantt., Dhaka.
- Brig. Gen. Md. Nurul Amin, MBBS, DDV, DD, MD (Derma), Adviser Specialist in Dermatology & Venereology, CMH, Dhaka Cantt., Dhaka.
- Major Md. Abdul Latif Khan, MBBS, DDV, FCPS, CMH, Dhaka Cantt., Dhaka.
- Major Md. Syed Hasan, MBBS, DDV, CMH, Dhaka Cantt., Dhaka.

Address of correspondence: Lt Col Md. Abdul Wahab, Senior Classified Specialist in Dermatology & Venereology, Skin Department, CMH, Dhaka Cantt., Dhaka.

pompholyx, juvenile plantar dermatosis and keratoderma. All these tests were carried out in the laboratory of Armed Forces Institute of Pathology, Dhaka Cantonment, Dhaka. The clinical expression of PPPS are many folds. Noble distinguished four clinical variants of palmoplantar psoriasis:

1. Typical red patches sharply demarcated and covered by adherent psoriatic scales.
2. Diffuse mild hyperkeratosis with rhagades and scales.
3. A very thick hyperkeratotic layer resembling hereditary type of palmoplantar keratoderma; and
4. A diffuse erythema.

In this study, the categorization of PPPS was done depending on Noble categorization as follows:

- Mild - Noble type 1 and 2 (Fig.-1a)
 Moderate - Noble type 3 (Fig.-2a)
 Severe - Noble type 4 (Fig.-3a)

Bath PUVA (topical psoralen bath with ultraviolet light A): 2 ml of 8-methoxypsoralen lotion was mixed with 2 liters of plain tap water and then immersed

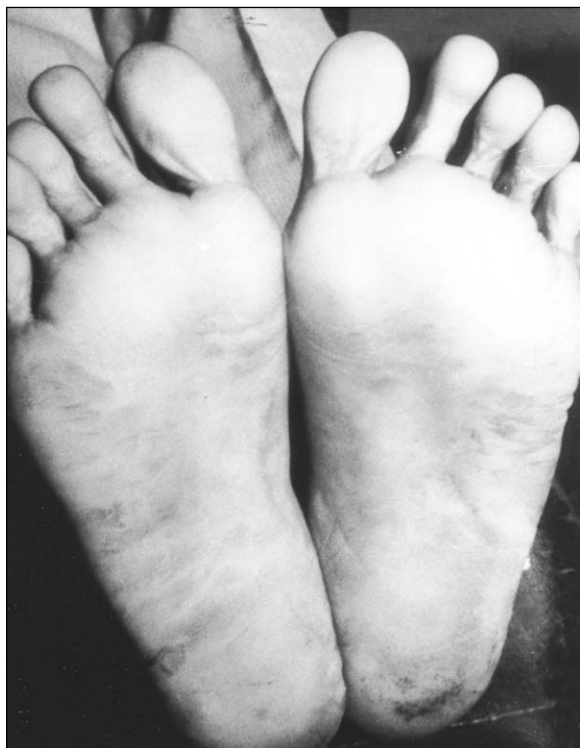


Fig.-1 (a): Before treatment in mild type of PPPS.

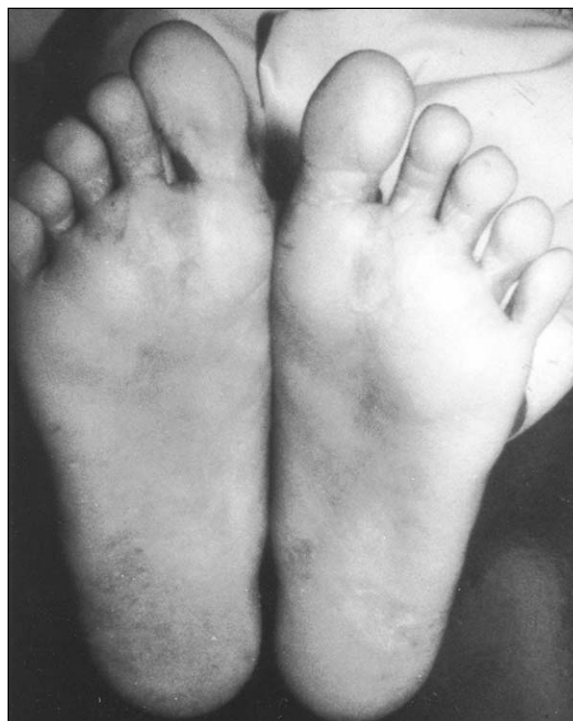


Fig.-1 (b): After treatment in mild type of PPPS.



Fig.-2 (a): Before treatment in moderate type of PPPS.



Fig.-2 (b): After treatment in moderate type of PPPS.



Fig.-3 (a): Before treatment in severe type of PPPS.

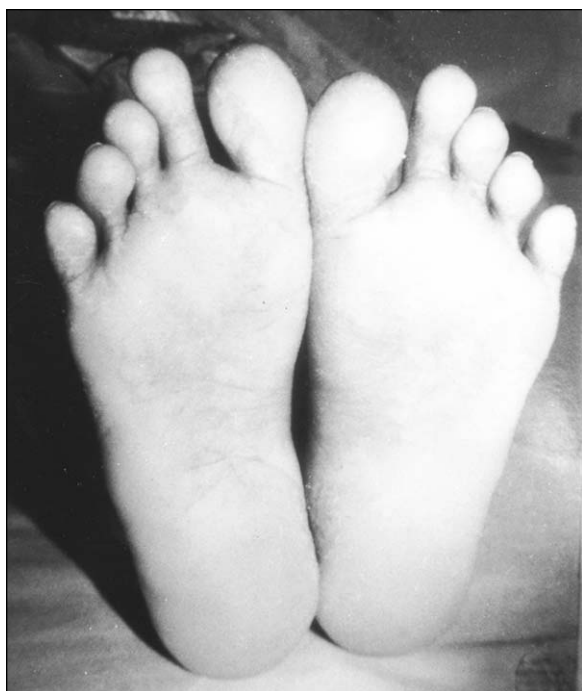


Fig.-3 (b): After treatment in severe type of PPPS.

both hands and feet into psoralen mixed water for half an hour. After drying UVA was given by dermaray machine of Eisai and Torex company of Japan. The wavelength of UVA was 8 mw/cm^2 . Bath PUVA was given thrice in a week initially and then twice and once in a week according to the response of the patient over a period of 3-6 months. The initial dose of UVA was 2.5 j/cm^2 and increased the dose $.5 \text{ j/cm}^2$ weekly upto 6.5 j/cm^2 . Patients were followed up monthly for another two years. Adjuvant therapy was given as 20% urea cream twice daily. Improvement was noted on the basis of erythema, induration and desquamation.

Results:

Among the 50 cases, 20 (40%) were between the age group of 40-50 years. The mean age of the cases was 35.06 years with standard deviation ± 8.93 years (Table-I). The distribution of the cases by sex shows that thirty were male and twenty were female (Table-II). Twenty (40%) suffered from the symptoms of PPPS for less than six months duration followed by eighteen (36%) for six months to two years and twelve (24%) cases for more than two years duration (Table-III).

In this study, the grading of the disease process on the basis of Noble categorization shows mild type of PPPS in twenty six, moderate type of PPPS sixteen and severe type of PPPS in eight cases (Table-IV). In mild cases, average number of UVA exposure was 30 and dose of UVA was 85 j/cm^2 , in moderate cases, average number of UVA exposure was 40 and the dose of UVA was 125 j/cm^2 and in severe cases, average number of UVA exposure was 45 and the dose of UVA was 145 j/cm^2 . Among them sixteen cases were cleared off lesions in mild type (Fig.-1b), eight in moderate type (Fig.-2b) and two in their severe type of PPPS (Fig.-3b) (Table-V). During two years follow up period, relapses were observed among two mild cases, three moderate cases and in one severe case (Table-VI). During the study, no gross side effects have been observed.

Table-I

Shows the distribution of age of the study population (n=50)

Age in years	No. of patients	Percentage
20-30	14	28
30-40	16	32
40-50	20	40
Mean \pm SD = 35.06 years \pm 8.93 years		

Table-III

Shows the duration of symptoms of the study population (n=50)

Duration of symptoms	No. of Patients	Percentage
< 6 months	20	40
6 months to 2 years	18	36
Over 2 years	12	24

Table-II

Shows the Sex distribution of the study population (n=50)

Sex	No. of patients	Percentage
Male	30	60
Female	20	40

Table-IV

Shows the grading of the disease process on the basis of Noble categorization (n=50)

Grading	No. of patients	Percentage
Mild	26	52
Moderate	16	32
Severe	08	16

Table-V

Shows the result of treatment with bath PUVA (n=50)

Grading	Average Number of exposure	Total dose of UVA j/cm ²	No. of patients	No. of patients cleared off	Percentage of patients cleared off
Mild	30	85	26	16	62
Moderate	40	125	16	08	50
Severe	45	145	08	02	25

Table-VI

Shows the relapse during follow up period (n=50)

Grading	No of patients cleared off	No. of relapse	Percentage
Mild	16	02	12.50
Moderate	08	03	37.50
Severe	02	01	50

Discussion:

In the present study, it has been observed that bath PUVA was effective in the treatment of PPPS in 62% mild cases, 50% moderate cases and 25% severe cases. So, bath PUVA appeared to be more effective than potent steroid, 10% salicylic acid, 20% urea cream and emollients which has been previously used by these patients. It is now widely accepted that bath PUVA can be used safely and effectively in both adults and children in case of PPPS and also in other forms of psoriasis^{1,9}.

Bath PUVA does not have any gross side effects (erythema, pain, blistering and patchy hyperpigmentation) on the skin and also it does not produce phototoxicity like systemic PUVA¹⁰.

Bath PUVA acts on PPPS as an antiproliferative, immunosuppressive and antiinflammatory agent. Therefore, bath PUVA seems to have a similar mode of action in the treatment of other forms of psoriasis^{11,12}.

Other drugs like retinoids, methotrexate, systemic PUVA have been used to treat PPPS and also other forms of psoriasis¹³. However, long term use of these drugs may induce serious adverse effects like phototoxicity, liver damage, pseudotumour cerebri, teratogenic effects, induction of carcinogenesis, hyperlipidemia etc.^{13,14}. So, considering the side effects and effectiveness bath PUVA is safe and effective in mild and moderate cases of PPPS, if treated earlier.

In this study, bath PUVA cleared of lesions in 62% mild cases of PPPS which is better than previous regimens. So, bath PUVA can be highly efficient in the treatment of palmoplantar psoriasis. However, more research may be done on this aspect to confirm the effectiveness of bath PUVA.

References:

1. Kansky A, Pavicic Z. Dermatological lesions of palms and soles. *Yugoslavia, Ajda Pasic*; 1986. pp- 29-40.
2. Richard B. Odom, Willium D. James, Timothy G. Berger. *Andrews diseases of skin*. Ninth edition, Philadelphia, WB Saunders Company; 2000. pp- 218-234.
3. Rook A. *Text book of Dermatology*. Sixth edition, London, Blackwell Scientific Publication; 1999. pp- 1590-1600.
4. Coleman WR, Cowe NJ, David M, Halder RM. Palmoplantar psoriasis: Experience with 8 mop soaks plus UVA with the use of high out put metal halid device. *J Am Acad Dermatol*. 1989; 20: 1078-1082.
5. Freedberg IM, Elisen AZ, Wolff K, Auster KF, Gordsmith LA, Katz SI. *Fitzpatrick's Dermatology in General Medicine*. Sixth edition, Toronto, Mc growhil: 2003. pp- 407-425.
6. Nakamura K, Imakedo S, Takizawa M, Akamudo T, Okaya F. Exacerbation of pustulosis palmaris et plantaris after topical application of metal accompanied by elevated level of leukotrine in pustules. *J Am Acad Dermatol*. 2000; 42: 1021-1025.
7. Yokochi K, Tamada Y, Takama H, Oneshi M. Role of adhesion molecules in the development of pustular lesions in patients with pustulosis palmaris et plantaris. *Acta Derm Venereal (stocks)*. 1996; 22: 118-122.
8. Yokomizo T, Izomi T, Chanz K, Takuwa Y, Shimizu T. AG protein couple receptor for leukotrene B₄ that mediates chemotaxis. *Nature*. 1997; 387: 620-624.
9. Elizabeth F, Abel MD. *Phototherapy in Dermatology*. First edition, Tokyo, Ige Aku Publication, 1992. pp- 101-107.
10. Gange RW, Andersen RR. Topical (bath water) PUVA therapy (letter to the editor). *J Am Acad Dermatol*. 1991; 34: 401-2.
11. Sober AJ MD, Patrick TBF MD. *Palmoplantar psoriasis*. Year book of Dermatology. Nineteen hundred ninety eight edition. Philadelphia, Mosby: 1998. pp- 246-4.
12. Stephen E, Wolventon MD. In: *comprehensive Dermatologic Drug Therapy*. Second edition, Philadelphia: W.B. Saunders company, 2001. pp- 311-321.
13. Behrens S, von kobyletzki G, Gruss C, Reuther T, Altmeyer P, Kerscher M. PUVA-bath photochemotherapy (PUVA-soak therapy) of recalcitrant dermatoses of the palms and soles. *Photodermatol photoimmunol photomed*. 1999; 15: 47-50.
14. Schempr CM, Muller H, Czech W, Schopf E, Simon JC. Treatment of chronic palmoplantar eczema with local bath-PUVA therapy. *J Am Acad Dermatol*. 1998; 38: 505-6.