

The Efficacy and Safety of Systemic PUVA and UVB Phototherapy in the Management of Chronic Plaque Psoriasis

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ABSTRACT

Background: Psoriasis is a complex, chronic multifactorial inflammatory skin disease characterised by well demarcated, erythematous, scaly plaques on the extensor surface's of the body and scalp. The purpose of the study to compare the efficacy and safety of systemic PUVA and UVB phototherapy in the management of chronic plaque psoriasis.

Materials and methods: This comparative study was conducted at the Department of Dermatology and Venereology, Bangabandhu Memorial Hospital, USTC, Chattogram during the period of February 2018 to January 2019. Total 50 patients were selected in two groups, systemic PUVA (Psoralen and Ultraviolet A) (n=25) and UVB (Ultraviolet B) (n=25). Involvement of body surface by plaque psoriasis, erythema, scaling and induration were recorded in a 3 point scale before treatment and 14 days interval after giving PUVA or UVB and finally at 8th week.

Results: Significant reduction of psoriasis at 1st follow up in systemic PUVA and UVB were 29.85 ± 8.95 and 31.93 ± 11.55 respectively and at 2nd follow up were 85.86 ± 7.33 and 28.48 ± 39.32 respectively. Significantly higher improvements was observed in systemic PUVA group than UVB group both at 1st and 2nd follow up.

Conclusion: Therapeutic values of systemic PUVA is better than UVB phototherapy in the management of Chronic plaque psoriasis.

Key words : Chronic plaque psoriasis; Immune system; Systemic PUVA; UVB phototherapy.

Introduction

Chronic plaque psoriasis is the most common presentation of psoriasis. The name psoriasis is derived from the Greek word 'Psora' which means itch¹.

Etiology of psoriasis is not known but is believed to have genetic predisposition. Psoriasis affects both sexes equally and can occur at any age. The prevalence of psoriasis in Western populations is estimated to be around 2-3%². Psoriasis is usually graded as mild, moderate or severe. Several scales exist of measuring the severity of psoriasis³.

It is frequently resistant to traditional topical therapies such as potent steroids, calcipotriol and anthralin but good response to Psoralen plus Ultraviolet A (PUVA)⁴⁻⁸.

Systemic PUVA has potential disadvantages of nausea, headache and hepatotoxicity after taking 8-methoxypsoralen (8-MOP) tablets and leads to photosensitization

of skin for at least 6-12 h. In chronic palmoplantar eczema and psoriasis these systemic side effects can be avoided by the administration of 8-MOP in dilute bath-water solution, so-called local bath PUVA therapy⁹⁻¹¹.

The purpose of this study is to compare the efficacy and safety of systemic PUVA and UVB phototherapy in the management of chronic plaque psoriasis.

Materials and methods

This comparative study was conducted in the Department of Dermatology and Venereology, Bangabandhu Memorial Hospital, Chattogram during the period of February 2018 to January 2019. Total 50 patients were selected for this study into two groups. Chronic plaque psoriasis of more than 15 years aged and both sex group were included in the study. 25 samples were selected for systemic PUVA therapy and 25 samples for UVB phototherapy.

Patient fulfilling the inclusion criteria were enrolled in the study. A written informed consent was taken from the patient. Patient's data was recorded in predesigned structured questionnaire. Information was collected by taking clinical history and clinical examination. Patients were instructed to report every 14 days interval for 8 wks to observe the efficacy and side effects of systemic PUVA and UVB.

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Patients unwilling to undergo investigations or those with bleeding disorder in whom skin biopsy was contraindicated were excluded from the study. Necessary investigations and histopathological examinations of lesional skin biopsy specimen from all patients were done and histologically confirmed patients were finally selected for the study. The data regarding different variables were analyzed accordingly and SPSS-17 was used for analysis.

Results

Table I Distribution of age by group

Age (In years)	Group		p value*
	Systemic PUVA (n=25)	UVB (n=25)	
£30	5(20.0)#	15 (60.0)	
45-60	15 (60.0)	8 (32.0)	
>60	5 (20.0)	2 (8.0)	
Total	25 (100.0)	25 (100.0)	
Mean (±SD)	45.72 (±15.0)	37.28 (±16.94)	0.068

* t test was done to measure the level of significance.
Figure within parentheses indicates in percentage.

Table II Distribution of sex by group

	Group		p value*
	Systemic PUVA (n=25)	UVB (n=25)	
Male	20(80.0)#	15 (60.0)	0.157
Female	5 (20.0)	10 (40.0)	
Total	25 (100.0)	25 (100.0)	

* Chi-square test was done to measure the level of significance.
Figure within parentheses indicates in percentage.

Table III Distribution of chief complaints by group (n=50)

Chief complaints	Group		p value
	Group 1	Group 2	
Scaling			
Severe	5 (20)	3 (12)	0.245*
Moderate	15 (60)	12 (48)	
Mild	5 (20)	10(40)	
Erythema			0.999*
Erythema	20 (80.0)	20 (80.0)	
Moderate	8(32)	5 (20)	0.101*
Mild	12(48)	8 (32)	
Absent	5 (20)	12 (48)	
Plaque			
Severe	3 (12)	3 (12)	0.999*
Moderate	22 (88)	22 (88)	
Nail change			
Present	9 (36)	5 (20)	0.102**
Absent	16 (64)	20 (80)	

* Chi-square test was done to measure the level of significance.
* Fisher’s Exact test was done to measure the level of significance.
* Figure within parentheses indicates in percentage.
Group-1= Systemic PUVA
Group-2=UVB.

Table IV Distribution of improvement scale after 4 weeks by group

Improvement Scale	Group		p value
	Group 1	Group 2	
Scaling			
Slight improvement	2 (8.0)	3 (12.0)	0.081
Moderate Improvement	13 (52.0)	19 (76)	
Marked Improvement	10 (40.0)	3(12.0)	
Erythema			
Worse	0(,0)	0 (0.0)	0.999
Slight improvement	2(8.0)	2 (8.0)	
Moderate Improvement	8 (38.1)	7 (28.0)	
Marked Improvement	15(42.9)	16(64.0)	
Plaque			
Slight improvement	3 (12.0)	5 (20.0)	0.014
Moderate Improvement	22 (88.0)	20 (80.0)	

* Chi-square test was done to measure the level of significance.
* Figure within parentheses indicates in percentage.
Group-1= Systemic PUVA
Group-2=UVB.

After 4 weeks of treatment, improvement of scaling was not significantly different between two groups, (p=0.081) erythema was also improved significantly in both group 1 (p=0.999) plaque was improved significantly more in group 1 (p=0.014).

Table V Distribution of improvement scale after 8 weeks by group

Improvement Scale	Group		p value
	Group 1	Group 2	
Scaling			
Moderate Improvement	5 (20.0)	8 (32.0)	0.027
Marked Improvement	7 (28.0)	10 (40.0)	
Cleared	13 (52.0)	7 (28.0)	
Erythema			
Worse	0(,0)	0 (0.0)	0.999
Moderate Improvement	2(8.0)	4 (12.0)	
Marked Improvement	7 (28.0)	9 (36.0)	
Cleared	16(64.9)	12 (48.0)	
Plaque			
Moderate Improvement	5 (20.0)	10 (40.0)	0.001
Marked Improvement	16 (64.0)	13 (52.0)	
Cleared	4(12.0)	2(8.0)	

* Chi-square test was done to measure the level of significance.

* Figure within parentheses indicates in percentage.

Group-1= Systemic PUVA

Group-2=UVB.

After 8 weeks of treatment, improvement of scaling, erythema and plaque was significantly better in group 1 ($p < 0.05$).

Discussion

Among the 50 patients 25 were treated with systemic PUVA and another 25 were treated with UVB. Out of all patients of systemic PUVA group 20.0% patients had age up to 30 years 60.0% belonged to 45 to 60 years and 20.0% above 60 years. In UVB group maximum patients belonged to up to 30 years age group followed by 32.0% within 45 to 60 years and 8.0% more than 60 years age group. Mean (\pm SD) age was 45.72 (\pm 15.0) and 37.28 (\pm 16.94) years of both systemic PUVA and UVB group respectively.

In systemic PUVA group 80.0% were male and 20.0% were female and in UVB group 60.0% were male and 40.0% were female. No statistically significant difference was observed between groups in term of sex. Almost all patients of both group had erythema, scaling and plaque. 100.0% patient of both systemic PUVA and UVB group had scaling. In systemic PUVA group 100.0% had plaque and 80.0% had erythema.

At baseline there was no significant difference between two treatment groups. After 4 weeks of treatment, improvement of scaling was not significantly different between two groups ($p = 0.081$), erythema was also improved significantly in both group ($p = 0.999$), plaque was improved significantly more in group 1 ($p = 0.014$). After 8 weeks of treatment, improvement of scaling, erythema and plaque was significantly better in group 1 ($p < 0.05$).

A study showed that the efficacy and side effects of the different treatment modalities in a randomized half-side comparison. In that study both systemic PUVA and UVB achieved a reduction of the mean initial SI from 5.9 (95% Confidence Intervals (CI) 4.5-8.0) to 3.3(1.8-6.0) (44% SI reduction, $p < 0.005$, Student's paired t-test) and 6.0(5.0-7.8) to 2.9(1.8-4.0) (52% SI reduction, $p < 0.005$), respectively¹². The statistical comparison of the entire 4 weeks study period revealed a significant better effect in lesions treated with oral PUVA compared with systemic PUVA ($p = 0.033$). Systemic side effects were only observed after systemic PUVA. In a study over 50 cases (30 male and 20 female) of 20 to 50 years age group, systemic 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 was observed in mild 62% moderate 50% and severe cases 25%¹³. It appears that systemic PUVA is safer and effective in moderate and severe cases of chronic plaque psoriasis if managed earlier.

Conclusion

From this study it may concluded that significant reduction of chronic plaque psoriasis was noticed with systemic PUVA, which is better than UVB phototherapy. Finally it may be recommended that systemic PUVA as a better therapeutic modality in the management of chronic plaque psoriasis.

Disclosure

The author declared no competing interest.

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