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Psoriasis: The Immune System Disease with Unknown Etiology Treated with Local Bath PUVA

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Abstract

Psoriasis is a chronic and lifetime disease which relates to the immune system, having unknown etiology. It typically emerges with dermal disorders and sometimes with joint disorders. Psoriasis Palmoplantar is a kind of localized chronic dermatosis in palms of hands and soles of feet; the significance of which is its resistance to treatment and high rate of reoccurrence. Psoriasis Palmoplantar significantly influences the quality of patients' lives due to affecting their everyday life tasks.

Procedure: This is a descriptive analytical study, performed in retrospective method. The target society for this study includes all patients suffering from Psoriasis Palmoplantar, who referred to X-Ray Clinic of Razi Hospital during the years of 2005 to 2009 and went under treatment using Local Bath PUVA. Questionnaires were made subject to the data recorded in medical files of patients.

Results: Medical files of 95 patients, suffering from Psoriasis Palmoplantar, were investigated in this study. The patients, who referred, went under treatment using Local Bath PUVA at Razi Hospital. 49.5% of the patients were male and 50.5% were female. Average age of patients was 44.17 years. The youngest patient was 6 years old and the oldest was 81 years old. Most of patients were in 4th and 6th decades in age. Average number of treatment sessions for the studied patients were 42.5 sessions and average collective radiation dose was J/CM2 251.8.

Occurrence rate of side effects in studied patients was 20%. In final assessment, 16.8% of patients had a very good response to treatments (75% to 100% recovery of disordered dermal surfaces). 35.8% of patients had a good response to treatments (50% to 75%) and 29.5% of patients had an average response to treatments (25% to 50%) and 9.5% of patients had a weak response to treatments (less than 25%) and 8.4% of patients showed complete failure in treatments.

In statistical terms, collective radiation dose for patients with very good treatment response (more than 75%) was significantly higher than other patients. The number of treatment sessions in these individuals was significantly higher than other patients. But among those patients with lack of recovery, low recovery and average and good recovery, there was no significant difference in number of sessions or dose of radiation. There was no significant difference between the

gender of the patients and their response to the treatment (P: .043). Average age of patients with good recovery response was significantly higher than those with no recovery response (P: .018).

Keywords: Psoriasis; Psoriasis Palmoplantar; Local Bath PUVA; 95 patients; Chronic dermatosis

Abbreviations: PUVA: Psolaren and Ultra Violet radiation spectrum A.

Introduction

Etiology

Psoriasis is inherited genetically and is a dominant autosomal disease, with variable penetrations rates. The cause for Psoriasis is unknown, but some people are more susceptible to its occurrence.

Studies showed that Psoriasis is a self immune disease, relating to types of B17, B37 and B13 HLA.

Pathogenesis

Although the pathogenesis of Psoriasis is still unknown, there are clear evidences that Psoriasis is the result of interaction between innate and adaptive immune system in skin and joints. Scientists believe that in Psoriasis, the immune system causes an increase in growth and activity of Mitotic Keratinocytes of basal layer in medium of T Cells, and decreases immigration duration of Keratinocytes from basal to surface to 3-5 days from 28 days in the patients.

Clinical Exposures

Psoriasis is a Papulosquamous disease with morphology, distribution, severity and variable courses. Psoriasis lesions are in circular plaques and Popules with certain boundaries, the surface of which is covered with white and silver sticky and dry skins.

Psoriasis Palmoplantar

Psoriasis occurs on palms of hands and soles of feet in form of sloughing patches which is the result of scratching lesions, where thin silver skin exposes on the place or they expose in form of plaques with unclear limits. It is similar to hyperkeratotic eczema or as simplex; in some cases, they expose as pustulosis.

Psoriasis may occur on the back of hands or feet in form of increasing in thickness and redness of skin; but, it is usually in typical form on palms of hands and soles of feet. There may be a correlation between disease, trauma, and occupational conditions of patients.

Epidemiology

Pustulosis Palmoplantar has global widespread. Although it is considered rare relative to other types of Psoriasis, no accurate prevalence data is present for it. It sounds that this disease has more prevalence in females than males with a rate of 3:1. Prevalence of the disease is mostly between the ages of 20-60 years old [1-5].

Treatment

PPP disease is resistant to treatment and its high prevalence is reported in all treatment methods. The first step in treating the disease is advising the patients to quit smoking cigarette. In patients with low tolerance to gluten, gluten free diet positively affects Psoriasis skin lesions. Considering that skin abruption in palms of hands and soles of feet is low and even in acute attacks of disease which skin surface is locally destructed, only special medicines may effectively act. Potent and super potent local steroids are selective medicines and they may be used under plastic cover or under hydrocolloid wound dressing as initial treatment [3].

Other local treatments including Vit D3 analogues such as Calcipotriol Calcipotriene, Tazarotene and Athralin, may prevent early recurrence of the disease in some patients. Long term use of local steroids is usually required for reaching treatment targets. Treatment with Psolaren and Ultra Violet radiation spectrum A (PUVA) is an effective treatment method solely or in combination with systemic retinoid. PUVA Bath or application of PUVA with gel or Photosensitizing creams in case control studies show effective effects. In disabling cases and repeated reoccurrences of PPP, systemic retinoid is the only effective treatment option [6,7].

Photochemotherapy with Psoralen: The experience of treating Psoriasis by Coal-tar and UV and also, Photochemotherapy with Psoralen in treatment of Vitiligo, has suggested that similar treatment could be effective for Psoriasis. Later, studies proved the effectiveness of local treatment and edible one accompanied by PUVA in treating different patterns of

Psoriasis. PUVA treatment along with local Psoralen may prevent some side effects of which arise in the edible treatment; it is an option in treating patients with localized forms of disease in which local treatment repeats for 2-5 times a week. Dose of UVA gradually increases with regard to the treatment response of patient [8-11].

The Studies Society

The study society covers all Psoriasis Palmoplantar patients who were referred to the radiation clinic of Razi Hospital for treatment with local bath PUVA between years of 2005 to 2009 [12,13].

Methodology

Data Collection Method

The main objective of this study is observing the patience response to treatment with local bath PUVA, the patients were divided into 5 groups based on the optimization value of affected skin area in patients:

1. The group with no treatment recovery
2. Improvement in less than 25% of skin lesions of affected skin lesions
3. Improvement in 25-50% of skin lesions of affected skin area
4. Improvement in 50-75% of skin lesions of affected skin area
5. Improvement in 75-100% of skin lesions of affected skin area

Implementation Method

Files of all Psoriasis Palmoplantar patients referred to the radiation clinic of Razi Hospital for undergoing treatment with Local Bath PUVA from 2005 to 2009.

Data Analysis Method

SPSS software (Version 15) was used for data analysis and T-test guideline was used for quantitative variables; Chi-square was used for qualitative variables and Fisher order was also used for required cases. P was defined significantly in 0.05.

Results

In this study, files of 95 patients suffering from Psoriasis Palmoplantar who referred to the radiation clinic of Razi Hospital from 2005 to 2009. From the 95 studied cases, 47 were male (49.5%) and 48 were female (50.5%) (Table 1).

Gender of patients	Number	%
Male	47	49.50%
Female	48	50.50%
Total	95	100%

Table 1: Frequency of studied patients in terms of gender.

Age of patients was investigated at the starting date of treatments. The youngest patient was 6 years old and the oldest was 81 years old. Average age of the patients was 44.17 years. Frequency of the age of patients in terms of age decade was divided into 8 groups; where, the 4th and 6th decades had the highest group individuals (Table 2).

Age decades of patients	Number	%
0-10	2	2.1
10-20	8	8.4
20-30	11	11.6
30-40	20	21.1
40-50	17	17.9
50-60	20	21.1
60-70	13	13.7
70-80	3	3.2
80-90	1	1.1
Total	95	100

Table 2: Frequency of the age of studied patients in terms of age decades.

In 95 studied cases, the least number of treatment sessions was 10 sessions and maximum number of which was 120 sessions; in average, 42.5 sessions was with standard deviation of 20.9 treatment sessions. Most of the individuals had at least 30 to 35 treatment sessions. In 95 studied cases, the average collective radiation dose in patients was J/CM2 251.8 with standard deviation of 203.4. Least received collective radiation dose in above study was 15.2 and the highest rate of which was 1209.8.

57 of the patients continued treatments up to almost complete recovery and completed the treatment subject to orders of attending physicians. 13 patients (13.7%) stopped treatments because of short-term side effects including irritation, pruritus and erythema subject to orders of attending physicians or they stopped treatments without attending to the orders of attending physicians. 10 patients (10.5%) stopped treatments because of observing no treatment improvements; 15 patients stopped treatments with no reason mentioned in files and against the orders of attending physicians (Table 3).

Cause of stopping treatments	Number	%
Complete response or maximum response to treatment	57	60%
Short-term side effects	13	13.70%
Lack of receiving acceptable treatment response	10	10.50%
Low compliance of patients	15	15.80%
Total	95	100%

Table 3: Frequency of the cause of stopping treatments in studied patients

Values of collective radiation dose in patients based on the treatment recovery value were as follows (Table 4):

Collective radiation dose Value of Recovery	Number	Average	Standard Deviation	Minimum	Maximum
0	8	152.775	98.7633	34.6	312
Less than 25%	9	111.556	82.0589	15.2	254.6
25%-50%	28	253.543	209.9667	32	1060
50%-75%	34	233.712	121.8149	60.6	481.6
75%-100%	16	416.05	304.2764	120.2	1209.8
Total	95	251.878	203.4081	15.2	1209.8

Table 4: Value of collective radiation dose in studied patients regarding their treatment response

Among 95 studied patients, 19 patients (20%) suffered from short-term side effects including irritation, pruritus and erythema in skin and 76 patients (80%) experienced no side effect (Table 5).

Side effect	Number	%
Yes	19	20%
No	76	80%
Total	95	100%

Table 5: Frequency of short-term side effects in patients undergoing treatment with Local Bath PUVA

Frequency of short-term side effects in patients was investigated based on gender and there was no significant difference between genders in terms of side effects (P: 0.473) (Table 6).

Short-term side effects	Male	Female	Total
Yes	8	11	19
No	39	37	76
Total	47	48	95

Table 6: Frequency of short-term side effects based on gender of patients

Frequency of short-term side effects in patients was investigated in terms of age; there was no significant difference in occurrence of side effects in terms of age. (P: 0.814) (Table 7).

Short-term side effects	Number	Age average	Standard deviation
Yes	19	44.11	18.14
No	76	44.18	16.01

Table 7: Average age of patients in experiencing side effects

Based on treatment recovery, patients were divided into 5 groups including:

1. The group with no treatment recovery
2. Treatment recovery was assessed weak for patients with less than 25% in lesions recovery
3. Treatment recovery was assessed average for patients with less than 25%-50% in lesions recovery
4. Treatment recovery was assessed good for patients with less than 50%-75% in lesions recovery
5. Treatment recovery was assessed very good for patients less than 75%-100% in lesions recovery

In 95 studied patients, 16 (16.8%) patients had a very good recovery; 34 (35.8%) patients had a good recovery; 28 (29.5%) patients had an average recovery; 9 (9.5%) patients had a weak recovery. 8 patients experienced no recovery (Table 8).

Value of Recovery	Frequency	%
0	8	8.4
0-25%	9	9.5
25-50%	28	29.5
50-75%	34	35.8
75-100%	16	16.8
Total	95	100

Table 8: Frequency of patients subject to value of recovery after treatment with Local Bath PUVA.

In comparison of the rate of response to treatment and gender of patients, no significant difference was observed using Independent Sample T-test (P: .063) (Table 9).

Value of recovery		no recovery	Low	Average	Good	Very good	Total
Male	Number	5	5	11	15	11	47
	%	10.6	10.6	23.4	31.9	23.4	100
Female	Number	3	4	17	19	5	48
	%	6.2	8.3	35.4	39.5	10.4	100
Total		8	9	28	34	16	95

Table 9: Frequency of groups with different recovery values in both genders.

There was significant difference between average age and value of recovery of intergroup patients with very good response to treatment (75-100%) and the group with no recovery response (P: .018); i.e. average age of patients with very good recovery response was significantly higher than the group with no recovery response; this shows direct correlation of the recovery and age. Although, average age of patients in all groups increased with response to treatment, this difference was not significant in all groups (Table 10).

Age Recovery response	Average	Standard Deviation	Maximum	Minimum
0	33	10.7	50	18
0-25%	41.7	21.5	81	15
25-50%	42.3	15.5	62	6
50-75%	46.2	15.8	76	11
75-100%	49.8	16.3	75	29

Table 10: Age average in groups with different recovery responses.

In comparison of collective radiation dose between groups, there was a significant difference between the dose for patients in the very good recovery group and rest of patients in the rest of groups. (P<0.05); value of P in comparison of collective radiation dose between groups with different treatment recovery were as follows (Table 11):

Groups in Comparison	Compared Group	P
0	0-25%	0.991
	25-50%	0.67
	50-75%	0.809
	75-100%	0.015
0-25%	0	0.991
	25-50%	0.29
	50-75%	0.421
	75-100%	0.002
25-50%	0	0.67
	25-50%	0.29
	50-75%	0.994
	75-100%	0.054
50-75%	0	0.809
	25-50%	0.421
	50-75%	0.994
	75-100%	0.016
75-100%	0	0.015
	25-50%	0.002
	50-75%	0.054
	75-100%	0.016

Table 11: P Value in comparison of collective radiation dose in patients with different recovery values.

Also, in comparison of number of treatment sessions, average of treatment sessions in a group of patients with very good recovery response was significantly higher than patients in the other groups (P<0.05); P value in

comparison of number of treatment sessions for groups of patients with different recovery response is shows as follows (Table 12).

Groups in Comparison	Compared Group	P
0	0-25%	0.977
	25-50%	0.601
	50-75%	0.608
	75-100%	0.002
0-25%	0	0.977
	25-50%	0.17
	50-75%	0.467
	75-100%	0
25-50%	0	0.601
	25-50%	0.17
	50-75%	1
	75-100%	0.007
50-75%	0	0.608
	25-50%	0.167
	50-75%	1
	75-100%	0.004
75-100%	0	0
	25-50%	0.007
	50-75%	0.004
	75-100%	0.016

Table 12: P Value in comparison of number of treatment sessions for patients with different recovery values.

Discussion and Conclusion

From 95 studied patients, 47 were male (49.5%) and 48 were female (50.5%); this shows similar prevalence in both genders. In a Japanese study, the scientist performed an epidemiological study on 28628 patients with Psoriasis. The data suggested that 65.5% of the individuals were male and 34.2% were female. The data indicated a dominant prevalence of this disease in Japanese males. In addition, French scientists performed a study on 99 patients with Psoriasis in 2004. They concluded that the prevalence ratio of the disease in males relative to females was 0.77 [14-16].

In our study, average collective radiation dose in treating patients was 251.8. This average in female patients was 225.2 and in male patients was 279.0 which shows no significant difference (P: 0.133). In addition, there was no significant difference between age and collective radiation dose (P: 0.144).

In 95 studied patients, 34 (35.8%) patients had a good recovery (50% to 75%). 28 (29.5%) patients had average recovery (25% to 50%) and 16 (16.8%) patients had very good recovery (higher than 75%) and 9 (9.5%) patients had weak recovery (less than 25%) and 8 (8.4%) patients showed complete failure in treatments; i.e. highest rate of effectiveness of treatment with Local Bath PUVA in our study was about 50-75%.

This study showed significant difference between response to treatment and collective radiation dose; in a way that value of collective radiation dose in patients with very good treatment response (higher than 75%) was significantly higher than patients with no recovery response, low recovery response, and good recovery response (50-75%).

This shows indicates a direct correlation of collective radiation dose and recovery response. There was a similar significant correlation in terms of number of treatment sessions between patients with very good recovery response and other patients. Also, average age of patients with very good recovery response was significantly higher than average age of patients with no recovery response. This may indicate a direct correlation between age and recovery response in patients. However, no other similar study has any findings to support this conclusion.

Major goal of our study deals with investigating effectiveness of Local Bath PUVA on patients suffering from Psoriasis Palmoplantar referred to radiation clinic of Razi Hospital from 2005 to 2009. Our study data suggests that 52.6% of the patients had a good and very good recovery response; 29.5% had an average recovery response, and only 8.4% of patients faced failure in treatment [17-19].

Conclusion and Suggestion

As mentioned above in our study, collective radiation dose and number of treatment sessions in patients shows a very good recovery response to treatment with Local Bath PUVA indicating that it was significantly higher than other patients; this may show that treatments up to high collective radiation dose to reach recovery response may be very effective; it is required to inform patients and justify it to them before starting treatments and on long duration of this treatment method and achievement of results in long term toward higher compliance of patients with treatment procedures.

In our study, average age of patients with very good response to treatments was higher than patients with no recovery response, which possibly shows that lower age results in higher treatment failures.

In our study, more than half of patients experienced good and very good recovery responses; failure was only reported for 8% of patients, and the rest of patients showed weak to average recovery responses. Occurrence of side effects in this study was estimated to be 20%. These results suggest Local Bath PUVA is an effective method in treating Psoriasis Palmoplantar.

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