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ESTIMATION OF SEVERITY AND TREATMENT PATTERNS IN PATIENTS WITH CHRONIC PLAQUE PSORIASIS

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ABSTRACT

Background: Psoriasis is a common skin disease that is characterized by hyperproliferation of keratinocytes and immune system alterations. The most prevalent type is chronic plaque psoriasis. **Objective:** To estimate the severity and treatment patterns in patients with chronic plaque psoriasis. **Patients and Methods:** This is a cross-sectional study which had been conducted at the department of dermatology and venereology in Al-Sader medical city of Al-Najaf Governorate and Marjan medical city of Babylon Governorate during the period between December 2021 and September 2022. Patients history regarding age, sex, age of onset, duration of the disease, type of therapy including topical steroid, methotrexate, cyclosporine, acitretin, and biological therapy, duration of therapy 4-6 months, family history of psoriasis, smoking, and past medical history. Full examination was done and psoriasis severity was identified by measuring the Psoriasis Area and Severity Index score (PASI score). **Results:** Assessment of PASI score showed that (N=100, 50%) of patients had a mild disease, there was a significant association between the age of patients and the psoriasis severity and higher PASI score were reported in males compared to females. The examination of PASI score according to different modalities of systemic therapy showed higher mean PASI score for patients treated with acitretin (16.72±7.56) and lowest mean PASI scores for those received etanercept and adalimumab (3.38±3.63, 4.13±3.68) respectively. **Conclusion**: The study showed higher PASI score with older age patients and males show more severe psoriasis than females. Lower PASI score was detected in patients treated with biological agents while highest PASI score was reported in those treated with acitretin.

KEYWORD: Psoriasis, Biology.

INTRODUCTION

Psoriasis is a common, chronic, immune-mediated illness that results from a combined polygenic predisposition and environmental triggers, e.g. trauma, infection, psychological stress, and drugs. The most prevalent type is chronic plaque psoriasis which is characterized by sharply demarcated, scaly, erythematous plaques. The scalp, elbows, and knees are the most common affected areas.[1] Other clinical types include guttate psoriasis, inverse psoriasis, pustular psoriasis, erythrodermic psoriasis, scalp and nail psoriasis.[2] From infancy through the eighth decade of life, psoriasis can appear at any age with two peaks in age of onset have been reported: one at 20–30 years of age and a second peak at 50–60 years.[1] Before 1979, psoriasis was regarded as a keratinocyte dysregulation disease. The concept of psoriasis as a T- cell mediated disease has been emerged between 1980 and 2000, and it was supported by studies that showed improvement of psoriasis with inhibition of lymphocyte.[3] In the last 10 years, large scale genome–wide association studies of psoriasis have been conducted in multiple populations, and these studies show that more than 80 genetic loci are associated with psoriasis. The majority of these loci are associated with immunological response, including IL-23, IL-17, Interferon, NF-Kb signals, Dendritic cell -Macrophage function, and keratinocyte response.[4] Treatment options of psoriasis include topical treatment, phototherapy, and systemic therapy. Topical steroid and vit D derivatives represent first line therapy for mild-moderate psoriasis, phototherapy used as first line therapy for moderate-sever psoriasis, and systemic therapy include methotrexate, cyclosporine, acitretin, and biological therapy are preferred option for moderate- sever disease and refractory cases.[1,5] There are several aspects for assessment of psoriasis severity including cumulative

activity of psoriasis over time, presence of co-morbidities like psoriatic arthritis, treatment responsiveness, and the impact of disease on life.[6] There are neither validated nor clinically useful laboratory markers of psoriasis severity. The PASI score is the most widely used as both a severity score and an outcome measure and was developed in 1978. PASI score is not appropriate in psoriasis other than chronic plaque psoriasis like pustular or guttate psoriasis in which record as percentage of body surface area may be preferred. Other tools for severity assessment include Physician Global Assessment which assessed the erythema, scaling, and induration without assessment of BSA. The PASI score is the most effective and widely sued tool for evaluation of disease severity, and the PASI score ranges from 0 to 72 with higher score indicating more sever disease.[7] Severe psoriasis has been variously defined as PASI >12, PASI >10 with DLQI >10, or score of 10 or more in either the PASI or DLQI or BSA.[6]

AIM OF THE STUDY: To estimate the severity and treatment patterns in patients with chronic plaque psoriasis.

PATIENTS AND METHODS

This is a cross-sectional study that had been conducted at the Department of Dermatology and Venereology in Al-Sader Medical City of Al-Najaf Governorate and Marjan Medical City of Babylon Governorate during the period between December 2021 and September 2022.A verbal consent was taken from all patients and an ethical approval was obtained from the Scientific Council of Dermatology and Venereology Iraqi Board for medical specializations. In the present study patients with a chronic plaque psoriasis were included. A standard questionnaire to collect the patients data regarding age, sex, age of onset, duration of the disease, type of therapy, duration of therapy (4-6 months), family history, smoking, and past medical history.

Inclusion criteria: A patient who was clinically diagnosed with chronic plaque psoriasis.

Exclusion criteria: Other variants of psoriasis, patients with body mass index >30, and patients with hypertension, diabetes mellitus.

Examination and classification: The patients who fit the inclusion criteria were examined carefully for scales, erythema, induration and sites of involvement in order to identify the PASI score manually. The patients were divided into three groups[3]

1- Mild chronic plaque psoriasis with less than 5 PASI score.
2- Moderate chronic plaque psoriasis with 5-10 PASI score.
3- Severe chronic plaque psoriasis with more than 10 PASI score.

RESULTS

A total of 200 patients with chronic plaque psoriasis were included in this study. The participants age ranged from (7-70) years with a mean of 37.06 ± 16.12 and (N=110, 55%) of them were below 40 years old. Patients with early onset psoriasis was (N=161, 80.5%). The majority of patients (N=127,63.5%) were males. Currently smoker patients represented (N=45, 22.5%) of patients while the remainder were either non smokers or stopped smoking for more than one year. The study showed that (N=83,41.5%) of patients have a positive family history of psoriasis. Mean disease duration was 10.76 ± 9.47. The evaluation of PASI score showed that PASI score mean was 7.003±6.84 with (N=100,50%) of patients had a mild psoriasis. The severity score ranged from (0-46.8), the highest severity score was detected in patients treated with acitretin (N=2,1%) while the lowest severity score reported in patients treated with etanercept (N=4, 2%), adalimumab (N=2,1%), and patient treated with MTX (N=1,0.5%). PASI score range form (0-15) for patients with biological therapy, (0-22) for MTX group, (1.5-23.5) for CsA group, and (8-46.8) for acitretin treated patients. According to treatment, (N=100, 50%) of the patients were on topical steroids while the remainder were on both topical steroids and systemic therapy for 4-6 months. **Table 2.**

Table 2: The distribution of patients according to study variables (N=200).

Study variables	Number	%
Age (years)		
<40	110	55.0%
40-60	70	35.0%
≥ 60	20	10.0%
Total	200	100.0%
Age of onset (years)		
Early onset <40	161	80.5%
Late onset >40	39	19.5%
Sex		
Male	127	63.5%
Female	73	36.5%
Total	200	100.0%
Smoking habit		
Smoker	45	22.5%
Non smoker	155	77.5%

Total	200	100.0%
Family history		
Positive	83	41.5%
Negative	117	58.5%
Total	200	100.0%
Duration of disease		
<5 years	63	31.5%
5-10 years	41	20.5%
10-15 years	38	19%
15-20 years	16	8%
>20 years	42	21%
PASI score		
Mild <5	100	50%
Moderate 5-10	43	21.5%
Sever >10	57	28.5%
Types of treatment		
Topical alone	100	50%
Methotrexate	22	11%
Cyclosporine	6	3%
Acitretin	10	5%
Etanercept	35	17.5%
Adalimumab	27	13.5%

The study showed more sever disease with increasing age and more severe disease was reported in males compared to females with a significant P-value=0.008**.** The present study showed significant association between psoriasis severity and age of onset, but no significant association of psoriasis severity with smoking habit, positive family history of psoriasis, and types of treatment**. Table 3.**

Table 3: Association between study variables and PASI score (N=200).

Study variables	PASI			P-value
	Mild (<5) (N=100)	Moderate (5-10) (N=43)	Severe (>10) (N=57)	
Age (years)				
<40	63 (63.0)	17 (39.5)	30 (52.6)	**0.008***
40-60	31 (31.0)	16 (37.2)	23 (40.4)	
≥ 60	6 (6.0)	10 (23.3)	4 (7.0)	
Age of onset (years)				
< 40	84 (84.0)	31 (72.0)	46 (80.7)	**0.003***
>40	16 (16.0)	12 (28)	11 (19.3)	
Sex				
Male	53 (53.0)	33 (76.7)	41 (71.9)	**0.008***
Female	47 (47.0)	10 (23.3)	16 (28.1)	
Smoking				
Smoker	18 (18.0)	9 (20.9)	18 (31.6)	0.141
Non smoker	82 (82.0)	34 (79.1)	39 (68.4)	
Family history				
Positive	34 (34.0)	23 (53.5)	26 (45.6)	0.072
Negative	66 (66.0)	20 (46.5)	31 (54.4)	
Type of treatment				
Systemic and topical treatment	53 (53.0)	25 (58.1)	22 (38.6)	0.107
Topical treatment	47 (47.0)	18 (41.9)	35 (61.4)	

*P value ≤ 0.05 was significant.

The association between sex and psoriasis severity was examined in both groups including those with topical therapy alone and those with systemic and topical therapy and showed more severe psoriasis in males with statistically significant P-value=0.011. Despite the fact that most of those with severe psoriasis on systemic therapy were males but there was no statistically significant association (P-value 0.301). No significant association was detected between the mean age of

patients in both groups with severity of disease. **Table 4-7.**

Table 4: Association between sex and PASI for those on topical therapy (N=100).

Study variable	PASI			Total	P-value
	Mild (<5)	Moderate (5-10)	Severe (>10)		
Sex					
Male	20 (42.6)	14 (77.8)	24 (68.6)	58 (58.0)	**0.011***
Female	27 (57.4)	4 (22.2)	11 (31.4)	42 (42.0)	
Total	47 (100.0)	18 (100.0)	35 (100.0)	100 (100.0)	

*P value ≤ 0.05 was significant.

Table 5: Association between sex and PASI for patients on systemic therapy (N=100).

Study variable	PASI			Total	P-value
	Mild (<5)	Moderate (5-10)	Severe (>10)		
Sex					
Male	33 (62.3)	19 (76.0)	17 (77.3)	69 (69.0)	0.301
Female	20 (37.7)	6 (24.0)	5 (22.7)	31 (31.0)	
Total	53 (100.0)	25 (100.0)	22 (100.0)	100 (100.0)	

Table 6: The mean differences of age (years) according to PASI for those on topical therapy alone (N=100).

Study variable	PASI	N	Mean ± SD	F-test	P-value
Age (years)	Mild (<5)	47	31.68 ± 16.43	2.758	0.068
	Moderate (5-10)	18	40.89 ± 16.38		
	Severe (>10)	35	37.09 ± 12.92		

Table 7: The mean differences of age (years) according to PASI for those on systemic therapy (N=100).

Study variable	PASI	N	Mean ± SD	F-test	P-value
Age (years)	Mild (<5)	53	36.87 ± 14.93	2.909	0.059
	Moderate (5-10)	25	45.64 ± 18.10		
	Severe (>10)	22	36.05 ± 17.07		

There was no significant association between PASI score and type of treatment with mean score for patient with systemic and topical treatment was (6.46 ± 6.66), while mean score for patients with topical treatment alone was (7.55±7.02). However, the examination of PASI score according to different modalities of systemic therapy show significant association (P-value <0.001) with higher mean PASI score for patients treated with acitretin (16.72±7.56) and lowest mean PASI scores for those treated with etanercept and adalimumab (3.38±3.63, 4.13±3.68) respectively. **Table 8 and Figure 1.**

Table 8: The mean differences of PASI score according to type of systemic and topical treatment (N=100).

Study variable	Systemic and topical treatment	N	Mean ± SD	F-test	P-value
PASI	Methotrexate + topical	22	9.12 ± 6.73	**15.066**	**<0.001***
	Cyclosporine+ topical	6	8.07 ± 9.15		
	Acitretin + topical	10	16.72 ± 7.56		
	Etanercept + topical	35	3.38 ± 3.63		
	Adalimumab + topical	27	4.13 ± 3.68		

*P value ≤ 0.05 was significant.

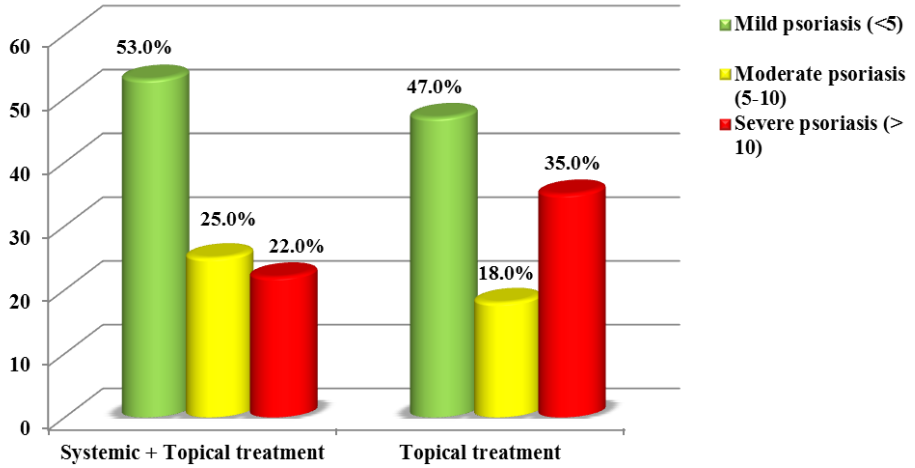

Figure 4: The association between PASI score and type of treatment (P=0.107).

DISCUSSION

Psoriasis is a common chronic multifactorial disease. The exact etiology of psoriasis is still unknown. Genetic susceptibility and various triggering endogenous and exogenous environmental factors are essential in its pathogenesis. The most common type is chronic plaque psoriasis. The natural history of disease is unpredictable and most of patients need long term therapy. The severity of chronic plaque psoriasis is generally assessed according to PASI score.[6] The study showed that the mean age of patients in the present study was 37.06 ± 16.12 years, 63.5% of the patients were males, and positive family history of psoriasis was detected in 41.5% of patients. These results were comparable with AL-Hamamy H. et al., that showed mean age of patients was 39.69 ± 10.57 years old and 73.91% of patients were males, and 47% of patients with psoriasis had positive family history of disease.[8] The evaluation of smoking habit in the present study showed that 22.5% of patients were smokers, and the mean PASI score was 7.003 ± 6.84. These results were comparable with the finding of EL-Komy M. et al., which showed 26.9% of studied group were smokers and mean PASI score was 9.4 ±8.4.[9] The present study showed increase psoriasis severity with increasing age. This finding was consistent with the finding of Kubanov A.et al., study in which the patients with severe psoriasis were older than those with mild disease.[10] However this is not comparable with the finding of Hagg D. et al., study which evaluated the severity of psoriasis and showed declining in PASI score throughout the age range.[11] This difference could be explained by different sample size of both studies. Males had a significantly higher PASI score than females in the present study, the result was comparable with the finding of Wei L.et al., and Hagg et al., studies.[11] Evaluation of association between PASI score and age of onset of psoriasis in the present study showed more sever disease in those with early onset psoriasis. These result were in consistent with the results of Ferrandiz C. *et* al., and Chularojanamontri L.et al., studies which showed that the onset of psoriasis before 30 years old was associated with more severe disease.[12,13] The present study showed no significant association between smoking habit and psoriasis severity with equal frequencies of mild and severe psoriasis in smoker patients. This result was not consistent with Wei L.et al., that found positive correlation between the smoking habit and psoriasis severity.[14] This may be explained by the small sample size. Also, the present study showed that systemic treatment requirements were higher in smoker patients and these results were comparable with Temiz S. et al., study.[15] The present study showed no significant association between positive family history of psoriasis with disease severity. To our knowledge, different studies assessed the association between positive family history of psoriasis and disease severity according to body surface area or different psoriasis severity scoring system with no study comparing the effect of positive family history of psoriasis on PASI score was reported. The present study showed less psoriasis severity in those treated with etanercept and adalimumab and highest disease severity in those treated with acitretin which was consistent with Piaserico S. et al., study.[16] The present study showed that smoker patients treated with systemic therapy were divided as following: etanercept (10 patients), adalimumab (5 patients), MTX (8 patients), CsA (4 patients), and only one patient treated with acitretin. However the reported PASI scores were lower in those with biological therapy, MTX, CsA compared to those with acitretin. These results could be supported to what Anzengruber F et al. study which evaluated the impact of smoking on traditional and biological anti-psoriasis therapy and showed that smoking have no effect on the efficacies of these agents.[17] Also Constantin M. et al. showed that smoking does not affect the response of biological therapy.[18]

CONCLUSION

1- Higher PASI score is associated with older age patients.
2- Males show more severe psoriasis than females.
3- No significant association between PASI score with smoking habit, and positive family history were detected.

4- Lower PASI score was detected in patients treated with biological agents (etanercept and adalimumab).
5- Highest PASI score was reported in those treated with acitretin.

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