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Psoriasis Severity and the Prevalence of Major Medical Comorbidity and the Effectiveness of Diagnostic Imaging of Psoriatic: A Population-Based Study Among Adult Patient Kingdom of Saudi Arabia 2021

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Abstract

Background: Psoriasis is the most common T helper 1 mediated inflammatory disease, affecting more than 125 million people worldwide [1]. About 60% of psoriasis patients suffer from moderate to severe disease, i.e. more than 10% of the body surface area is covered by psoriatic plaques [2].

Objectives: To assess the prevalence of sever psoriasis among adult patient at Kingdom of Saudi Arabia 2021.

Method: A retrospective case-control study was done on 50 patients who suffered from psoriasis by utilizing the charts of patients who selected randomly by accessing to management report viewer records through information technology (IT) department in Kingdom of Saudi Arabia.

Results: Our cohort included 50 patients with confirmed psoriasis. Psoriasis severity was determined in 35 patients (70%). The age of our cohort ranged from 15 to 72 years with the mean of 31.4 years. The statistical analysis reported a significant correlation between age and PASI score regarding to the severity (P-value= 0.033 and 0.000 respectively), also a significant correlation between gender regarding to the severity of psoriasis (P-value= 0.000). Regarding to the severity of psoriasis among the two studied groups showed a significant correlation between the number of patients with PASI score more than 10 and the occurrence of severe psoriasis (P-value=0.001)

Conclusion: the prevalence of psoriasis was higher among females. The mean age of our cases was 31.4 years. Our study depends on the PASI score to recognize the severe cases of psoriasis

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where we classify them according to it. Smoking and arthritis are risk factors for severe psoriasis.

Keywords: *Psoraisis, Severe psoraisis, psoriasis area severity index (PASI).*

Introduction

Psoriasis is the most common T helper type 1 inflammatory disease, affecting more than 125 million people worldwide [1]. About 60% of psoriasis patients suffer from moderate to severe disease, i.e. more than 10% of the body surface area is covered by psoriatic plaques [2]. Psoriasis Area and Severity Index (PASI) is the most widely used tool for the measurement of severity of psoriasis. PASI combithe assessment of the severity of lesions and the area affected into a single score in the range 0 (no disease) to 72 (maximal disease) [3].

A diagnosis of psoriasis is usually based on the appearance of the skin. Skin characteristics typical for psoriasis are scaly, erythematous plaques, papules, or patches of skin that may be painful and itch [4]. Depending on the severity of disease, appropriate treatment can be initiated. For mild to moderate disease, first-line treatment involves topical therapies including corticosteroids, vitamin D3 analogues, and combination products. These topical treatments are efficacious and can be safely initiated and prescribed by primary care physicians. Patients with more severe and refractory symptoms might require further evaluation by a dermatologist for systemic therapy e.g Methotrexate and biological therapy [5]. Methotrexate is an inhibitor of folate biosynthesis, used for its cytostatic and anti-inflammatory properties in the treatment of moderately severe to severe psoriasis, as well as psoriatic arthritis [6]. Biologics have emerged as highly potent treatment options in patients for whom traditional systemic therapies fail to achieve an adequate response, are not tolerated owing to adverse effects, or are unsuitable owing to comorbidities [7]. Family history is the best-established risk factor for developing psoriasis [8]. Psoriasis is associated with increased atherothrombotic diseases, including myocardial infarction, deep venous thrombosis, and reduced life span. Both disease-specific and non–disease-specific risk factors are likely to fuel one another in deleterious vicious circles. Disease-specific risk factors are those that are a direct consequence of psoriasis inflammation and include hyperhomocysteinemia, elevated C-reactive protein, elevated blood inflammatory cytokines, and platelet hyperactivity. Non–disease-specific risk factors include insulin resistance/diabetes, obesity, dyslipidemia, hypertension, metabolic syndrome, and habitual tobacco smoking [9].

Patients and methods:

A retrospective case-control study was done on 50 patients who suffered from psoriasis by utilizing the charts of patients who selected randomly by accessing to management report viewer records through information technology (IT) department in Hospital of the Kingdom of Saudi Arabia. Our patients were selected according to the inclusion criteria, and they visited the dermatology clinic from 1/1/2020 to 29/3/2021. In this study, the severe psoriasis cohort was defined based on either the PASI Score (if the PASI score>10 the patient was diagnosed as severe psoriasis case) or receiving the methotrexate or biological treatment as a systemic treatment.

Statistical analysis:

Statistical analysis was done using SPSS 16.0 statistical software package. Results were presented as mean and standard deviation for quantitative data, frequencies and percent for qualitative data. Independent t-test was used to compare quantitative variables between two study groups. Chi-square test was used for comparing qualitative variables between groups, Fisher exact test was used instead of chi-square with two by two tables when expected cell count less than five. A probability value of less than or equal 0.05 was considered statistically significant.

Results:

Our cohort included 50 patients with confirmed psoriasis. Psoriasis severity was determined in 35 patients (70%) (Figure 1). The determination of psoriasis severity depended either on the psoriasis area severity index (PASI) score or on receiving systemic treatment. If the PSAI score was higher than 10 the patient was diagnosed with severe psoriasis. In our study, the systemic treatment was either receiving biological treatment or Methotrexate.

Table1 describes the demographics of the study population. The age of our cohort ranged from 15 to 72 years with the mean of 31.4 years. 33 (66%) of our patients were females. 31 (62%) were married.

Information on risk factors for psoriasis including; smoking, diabetes mellitus (DM), dyslipidemia, hypertension (HTN) and arthritis was available for 22 (44%), 31 (62%), 27 (54%), 33 (66%), 29 (58%) of the patients, respectively (Figure 2) (Table2). The BMI of our patients ranged from 18 to 48 Kg/m^2 with the mean of 28.2. 27 (54%) were obese (BMI more than 30) (Table 2). The mean of duration of diagnosis of psoriasis was 7.59 years and ranged from 1 to 30 years. A PASI score is a tool used to measure the severity and extent of psoriasis. Our results estimated that the PASI score of our patients ranged from 1 to 22. The interpretation of PASI score was if the PASI score was higher than 10 the patient was diagnosed with severe psoriasis. Among our patients 17 (34%) were diagnosed with severe psoriasis (Table 2).

The diagnosis of psoriasis mainly depended on the appearance of the skin and on the clinical diagnosis, however in some cases the patient asked to perform a biopsy pathological examination to confirm the diagnosis of psoriasis. 43 (86%) of our patients were clinically diagnosed while the remaining (14%) were diagnosed through the histopathological examination of skin biopsy specimen. 35 (70%) of our patients had a family history of psoriasis. 18 (36%) received topical treatment, 17 (34%) received biological treatment while the remaining (30%) received the Methotrexate (MTX) treatment (Table 2) (Figure 3).

By comparing the means of quantitative parameters of the two studied groups (patients had severe psoriasis and patients hadn't severe psoriasis) including age, BMI, PASI score and duration of diagnosis by using the independent t-test, the statistical analysis reported a significant correlation between age and PASI score regarding to the severity (P-value= 0.033 and 0.000 respectively), where the mean of age was higher among non-severe patients (36.93 years) while the mean of PASI score was higher among severe patients (11.4) (Table 3). There was no significant correlation between both the means of BMI and duration of diagnosis regarding to severity (P-value= 0.624 and 0.066 respectively) (Table 3).

By comparing the demographic features of the two studied groups including gender, marital status and BMI by using the Chi-square test, the statistical analysis estimated a significant correlation between gender regarding to the severity of psoriasis (P-value= 0.000), where the occurrence of sever psoriasis was higher among females (Table 4).

Regarding to the method by which the psoriasis was diagnosed 43 (86%) of our patients were diagnosed clinically while the remaining 7 (14%) were diagnosed using a skin biopsy (Table %). The results of Chi-square test for comparing between the frequency of diagnostic tools and PSAI score regarding to the severity of psoriasis among the two studied groups showed a significant correlation between the number of patients with PASI score more than 10 and the occurrence of severe psoriasis (P-value=0.001) while there was no significant correlation between the type of diagnostic tools used in the psoriasis diagnosis and the severity of the disease (P-value=0.415) (Table 5).

Our results also estimated a significant correlation between smoking and arthritis as a risk factors for the incidence of severe psoriasis (P-value=0.012 and 0.000 respectively) while there was no significant correlation between diabetes mellitus, dyslipidemia and HTN regarding to psoriasis severity (P-value= 0.144, 0.577 and 0.474 respectively) (Table 6).

Table 1:Socio-detmographic among the 50 patients of study

Socio-demographic		No (50)	%
Age			
	Mean±SD	31.4±12.1	
	Min/Max	15/72	
Gender			
	Male	17	34.0
	Female	33	66.0
Marital Status			
	Single	19	38.0
	Married	31	62.0

Table 2:Table 2: Risk Factor , Diagnosis and Severity among study participants

Characteristics		No	%
Risk Factor			
	Smoking	22	44.0
	DM	31	62.0
	Dyslipidemia	27	54.0
	HTN	33	66.0
	Arthritis	29	58.0
BMI			
	Mean±SD	28.2±7.6	
	Min/Max	18/48	
	<30	23	46.0

	30+	27	54.0
Diagnosis duration in year			
	Mean±SD	7.7±5.9	
	Min/Max	1/30	
PASI Score			
	Mean±SD	9.36±4.98	
	Min/Max	1/22	
	≤10	33	66.0
	>10	17	34.0
Diagnosis			
	Clinical	43	86.0
	Biopsy	7	14.0
Family History			
	Positive	35	70.0
	Negative	15	30.0
Treatment			
	Biological	17	34.0
	Topical	18	36.0
	MTX	15	30.0
Severity			
	Yes	35	70.0
	No	15	30.0

Table 3: The correlation between Mean & SD of age, BMI, PASI score and duration of diagnosis between the two studied groups:

Characteristics	Mean±SD		T-test	P-value
	Yes	No		
Age	28.94±10.1	36.93±14.7	2.228	0.031
BMI	27.83±7.2	29.00±8.7	0.493	0.624
PASI score	11.40±4.4	4.60±2.4	3.232	0.000
Duration of Diagnosis	8.67±6.5	5.33±3.4	1.883	0.066
Independent t-test				

Table 4: The correlation between the demographic features and severity of psoriasis between the two studied groups

Socio-demographic	No	Severity				Chi Square	P-value
		Yes (35)		No (15)			
		No	%	No	%		
Gender							
Male	17	6	17.1	11	73.3	14.774	0.000
Female	33	29	82.9	4	26.7		
Marital Status							
Single	19	14	40.0	5	33.3	0.198	0.656
Married	31	21	60.0	10	66.7		
BMI							
<30	23	18	51.4	5	33.3	1.384	0.239
30+	27	17	48.6	10	66.7		

Table 5: The correlation between the frequency of diagnostic tools and PSAI score regarding to the severity of psoriasis among the two studied groups:

Characteristics	No	Severity				Chi Square	P-value
		Yes (35)		No (15)			
		No	%	No	%		
Diagnosis							
Clinical	43	31	88.6	12	80.0	0.641	0.415
Biopsy	7	4	11.4	3	20.0		
PASI in two groups							
<=10	33	18	51.4	15	100.0	11.039	0.000
>10	17	17	48.6	0	0.0		

Table 6:The correlation between risk factors regarding

Risk Factor	No	Severity				Chi Square	P-value
		Yes (35)		No (15)			
		No	%	No	%		
Smoking	22	11	31.4	11	73.3	7.483	0.012
DM	31	24	68.6	7	46.7	2.138	0.144
Dyslipidemia	27	18	51.4	9	60.0	0.311	0.577

HTN	33	22	62.9	11	73.3	0.514	0.474
Arthritis	29	28	80.0	1	6.7	23.180	0.000

Discussion:

Our study was reported that the age of our cohort ranged from 15 to 72 years with the mean of 31.4 years. Most of our participants were married females. Mainly our cases were diagnosed clinically and only few cases were diagnosed through the histopathological examination of skin biopsy specimen. Most of them had a family history of psoriasis. Regarding to the type of treatment; 18 (36%) received topical treatment, 17 (34%) received biological treatment while the remaining (30%) received the Methotrexate (MTX) treatment. The statistical analysis reported a significant correlation between age and PASI score regarding to the severity, where the mean of age was higher among non-severe patients while the mean of PASI score was higher among severe patients. Regarding to the risk factor for severe psoriasis, we reported a significant correlation between smoking and arthritis as a risk factors for the incidence of severe psoriasis while there was no significant correlation between diabetes mellitus, dyslipidemia and HTN.

Psoriasis has been sub classified according to age of onset. Early onset psoriasis (also referred to as type I) has onset before the age of 40 years, with peak onset at 16–22 years of age, and comprises 70% of all psoriatics. Late-onset psoriasis, also termed type II psoriasis, shows onset at or after age 40 years, with a peak age of onset between 57 and 60 years [13, 14]. Regarding to this classification our cohort included the three categories of psoriasis where the age of our cohort ranged from 15 to 72 years. Some studies indicated the average age of onset for psoriasis was 33 years of age, and 75% of cases occurred before 46 years of age [15], this study agreed with our results which reported that the mean age of our cases was 31.4 years.

Hägg et al., 2017 [16] reported that women have less severe psoriasis compared with men, after controlling for several possible confounders, these results disagreed with our results which estimated that the prevalence of sever psoriasis was higher among females (82.9%) than in males (17.1%).

The psoriasis area severity index (PASI), which is used for clinical evaluation, and the dermatology life quality index (DLQI), for quality of life assessment, are the most cited and most often used tools due to their high degree of reliability, applicability and reproducibility [17, 18]. Our study depends on the PASI score to recognize the severe cases of psoriasis where we classify them according to it. If the PASI score was higher than 10 the case was classified as severe psoriasis.

Current treatment guidelines for psoriasis recommend topical therapies for mild disease, either as monotherapy or in combination with phototherapy, and traditional oral systemic agents (e.g., methotrexate), or biologic agents (e.g., anti-tumor necrosis factor inhibitors) for moderate to severe disease [19, 20]. While our study was managed by considered the patient who received both the MTX and the biological treatment as a severe patient and we found that 18 (36%) received topical treatment, 17 (34%) received biological treatment while the remaining (30%) received the Methotrexate (MTX) treatment, then we have 35 severe cases among our participants.

Obesity plays a role in inflammation because fat acts as an endocrine tissue through the production of cytokines such as interleukin 6 and TNF-α [21]. Bhole et al. [22] investigated

differences in BMI in PsA, Ps, RA and general population. They observed that individuals with Ps, PsA and RA were at a greater risk of obesity than the general population.

Conclusion:

We can conclude our study as the prevalence of psoriasis was higher among females. The mean age of our cases was 31.4 years. Our study depends on the PASI score to recognize the severe cases of psoriasis where we classify them according to it. If the PASI score was higher than 10 the case was classified as severe psoriasis. Smoking and arthritis were important risk factors for developing severe psoriasis.

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