Clinicodemographic and laboratory features of 200 Egyptian psoriatic patients

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Received: 15 February 2022
Revised: 1 April 2022
Accepted: 13 April 2022
Published: 27 January 2023

Egyptian Journal of Dermatology and Venereology 2023, 43:15–23

Background
Psoriasis is a common and complex multifactorial disease, in which both genetic and extrinsic factors contribute to activating an immunological reaction.
Objectives
This study aimed to evaluate the clinical, demographic, and laboratory characteristics of Egyptian psoriatic patients in Sohag, Upper Egypt.
Patients and methods
This study was a cross-sectional hospital-based study conducted on 200 Egyptian psoriatic patients. All the patients were subjected to complete demographic, clinical, and laboratory evaluations.
Results
Of the 200 Egyptian patients with psoriasis, the mean age was 42.83±17.3 years; 60% were males, 53% were from rural areas, 47% were smokers, 66% were with positive family history, 91% were with gradual onset, 75% were with a progressive course, and 6.99±3.9 months was the mean duration of the diseases. The main associated symptom with psoriasis was itching in 72%. Psoriasis vulgaris was the most common type in 69.5%. Upper limbs were the most commonly affected sites in 78% of the psoriatic patients. Seasonal variation was the most common exacerbating factor in 51.5% of psoriatic patients. Iron-deficiency anemia was detected in 31% of the psoriatic patients. Liver diseases were associated comorbidities with 29.5% of psoriatic patients and hepatitis C virus infection was presented in 4.5% of psoriatic patients. Metabolic syndrome and stress were detected in 36 and 21% of psoriatic patients, respectively.
Conclusion
The healthcare providers and patients should be aware of the early detection of associated comorbidities with psoriasis to avoid major complications. The recognition of stress and its specific treatment should be considered an integral part of the treatment of psoriatic patients. Screening for hepatitis is important in Egyptian psoriatic patients. Consanguineous marriage should be avoided in patients with a family history of psoriasis.

Keywords:
clinical, demographic, psoriasis

Egypt J Dermatol Venereol 43:15–23

1110-6530

Introduction

Psoriasis has a complex multifactorial etiopathogenesis, in which both genetic and extrinsic factors contribute to activating an immunological reaction [1]. Psoriasis can be stimulated or exacerbated by external factors such as weather (cold weather), infections, stress, injury to the skin (Koebner phenomenon), and certain medications [2]. Psoriasis is found worldwide and the prevalence ranged from 2 to 4% of the world's population [3]. It varies among different ethnic groups. In Egypt, it varies from 0.19 to 3% [4]. In psoriasis, male to female ratio was 1.3 : 1 and females had a lower mean age of onset compared with males [5]. Tsai *et al.* [6] found that people living in rural areas had a low incidence of psoriasis (16.18%), while people in urban areas had a higher incidence of psoriasis (83.82%). Hawro *et al.* [7] found that the level of education correlates with the prevalence of psoriasis. A high prevalence of psoriasis was reported in the working people, especially those in stressful activities: engineers, students, managers, drivers, salesmen, and medical staff [8].

Psoriasis is a disease characterized by sharply demarcated erythematous plaques covered by silvery-white scales. These lesions are located at the elbows,

knees, scalp, umbilicus, and lumbar areas. Psoriasis can have several presentations; the most common type is plaque psoriasis (85.1%), followed by guttate psoriasis (2.9%), erythrodermic psoriasis (1.7%), and pustular psoriasis (1%) [9]. Psoriasis and psoriatic arthritis (PSA) are associated with an increased risk of cardiovascular diseases, Crohn's disease, depression, diabetes, metabolic syndrome (MetS), obesity, rheumatoid arthritis, osteoporosis, uveitis, and liver disease [10].

This study aimed to evaluate the clinical, demographic, and laboratory characteristics of Egyptian psoriatic patients in Sohag, Upper Egypt.

Patients and methods

A cross-sectional hospital-based study was conducted on 200 Egyptian patients with psoriasis aged from 6 up to 78 years old of both sexes, who attended the Dermatology Outpatient Clinics at Sohag University Hospital during the period from March 2019 to March 2020. The study design was approved by the Research and Ethical Committee of the Faculty of Medicine, Sohag University. Written informed consent was obtained from all the participants in the study after explanation of the nature of the study. The diagnosis of psoriasis was purely based on clinical examination and dermoscopy. Skin and nail biopsy was done in selected cases.

Demographic data of psoriatic patients included sex, age, residence, education, occupation, marital status, and special habits. The smoking index (SI) was calculated as follows:

SI= number of cigarettes per day×duration of smoking in years [11].

(Mild SI= less than 400, moderate SI=400–799, heavy SI= more than or equal to 800).

History of psoriasis included onset, course, duration, age, site of onset, drug use, and exacerbating factors. Family history of psoriasis, degree of consanguinity, personal, and family history of chronic autoimmune, or auto-inflammatory diseases were evaluated. General examination was done to exclude any associated medical comorbidities.

BMI was calculated: [weight (kg)/height (m^2)]. Weight and height were measured in light clothing without shoes, using calibrated instruments. General obesity was defined as BMI more than or equal to 30 kg/m^2 [12].

Complete dermatological examination was done which included the type and distribution of psoriasis, Koebner phenomenon, body surface area score, and any associated dermatological diseases.

Examination of the scalp, nails, eyes, joint, and mucous membrane was also done.

The following investigations were done on all psoriatic patients:

(1) Complete blood count: iron-deficiency anemia was considered if hemoglobin level less than 12 g/dl [13]
(2) Erythrocyte sedimentation rate (ESR).
(3) C-reactive protein (CRP).
(4) Fasting blood glucose (FBG).
(5) Lipid profile including serum triglyceride and serum high-density lipoprotein (HDL).
(6) Rheumatoid factor.
(7) Hepatitis B and C markers.
(8) Radiological examination of joints, and ECG were done in suspected cases.

Onychoscopy was done in 25 cases to confirm the diagnosis of nail psoriasis.

Nail biopsy was done for 20 patients with suspected nail psoriasis and the result was14 patients had nail psoriasis and six patients had onychomycosis.

All nail fragments (both soft and hard) were placed in a container with 10% formalin and then subjected to staining with hematoxylin and eosin and periodic acid–Schiff. Both hematoxylin and eosin and periodic acid–Schiff-stained sections were examined using the light microscope to assess different histopathological parameters.

Diagnosis of metabolic syndrome

According to the Joint Interim Statement: harmonized definition between (International Diabetes Federation 'IDF' and the National Cholesterol Education Program, Adult Treatment Panel 'NCEP-ATP III'): comprising five equal criteria. The presence of at least three was necessary and sufficient for MetS diagnosis [14]:

(a) Central obesity: defined as waist circumference with ethnicity-specific values of 100.5 and 96.25 cm in males and females, respectively. (b) Raised triglyceride: more than 150 mg/dl (1.7 mmol/l) or specific treatment for this lipid abnormality. (c) Reduced HDL cholesterol: less than 40 mg/dl (1.03

mmol/l) in males, less than 50 mg/dl (1.29 mmol/l) in females, or specific treatment for this lipid abnormality. (d) Raised blood pressure (BP): systolic BP more than 130 mmHg or diastolic BP more than 85 mmHg, or treatment of previously diagnosed hypertension. (e) Raised FBG: more than 100 mg/dl (5.6 mmol/l), or previously diagnosed type 2 diabetes.

Sample size calculation

The sample size was calculated according to Krejcie and Morgan [15]:

$$S = \frac{x^2 NP(1-P)}{d^2(N-1) + x^2 P(1-P)}.$$

S=sample size, χ^2=χ^2 of degree of freedom 1, and 95% confidence interval=3.841. N=population size, P=proportion of population (if unknown=0.5), d=the degree of accuracy expressed as a proportion (0.05).

Statistical analysis

All statistical analyses were conducted using SAS, version 9.2 (SAS Institute, Inc., Cary, North Carolina) (23). Qualitative variables were presented as frequencies and percentages and compared using the χ^2 test. Quantitative variables were presented as mean±SD and were compared by independent Student's *t* test. Regression analysis and correlations between different variables will be performed when indicated. The odds ratio was used. The test was considered significant when *P* value was less than 0.05.

Results

Sociodemographic characteristics of psoriatic patients

The mean±SD age of psoriasis patients was 42.83±17.3 years. Male patients represented 120/200 (60%) of patients with psoriasis. Residents of rural areas were 106/200 (53%). As regards educational level, 88 (44%) of the patients were illiterate and 64 (32%) were secondary educated. In the current study, 32.5% of psoriasis patients were workers. Married patients represented 73% of the cases, 47% were smokers, and 56.6% of these patients were heavy cigarette smokers. A positive family history of psoriasis was detected in 66 and 68% of the cases who had a history of consanguinity (Table 1).

Clinical characteristics

The mean±SD age at onset of psoriasis in the patients was 35.82±17.9 years. The onset of psoriasis was gradual in 182 (91%) of the patients, progressive course was in 150 (75%), and the mean duration of psoriasis was 6.99±3.9 months. Itching was found in 104 (72%) of the patients (Table 2).

Table 1 Sociodemographic characteristics of psoriatic patients

Parameters	Category	*N*=200 [*n* (%)]
Age (years)	Mean±SD	42.83 ±17.3
	Median (range)	44.5 (5–78)
Sex	Male	120 (60)
	Female	80 (40)
Residence	Rural	106 (53)
	Urban	94 (47)
Educational level	Illiterate	88 (44)
	Basic	19 (14.5)
	Secondary	64 (32)
	Higher	19 (14.5)
Occupation	Not working	39 (19.5)
	Student	18 (9)
	Housewife	37 (18.5)
	Farmer	16 (8)
	Worker	65 (32.5)
	Employee	13 (6.5)
	Teacher	12 (6)
Marital status	Unmarried	54 (27)
	Married	146 (73)
Special habits	Nonsmoker	106 (53)
	Smoker (Goza and Cigarette)	94 (47)
Smoking index for cigarette smokers (*N*=76)	Mild	9 (11.8)
	Moderate	24 (31.6)
	Heavy	43 (56.6)
Past history of similar condition	No	49 (24.5)
	Yes	151 (75.5)
Family history	No	60 (30)
	Psoriasis	132 (66)
	Vitiligo	8 (4)
Consanguinity	No	64 (32)
	Yes	136 (68)
Degree of consanguinity	1st	54 (39.7)
	2nd	20 (14.7)
	3rd	46 (33.8)
	4th	16 (11.8)
Drug history for other diseases	No	126 (63)
	Yes	74 (37)

As regards the therapeutic history of psoriasis patients, 72 (36%) of the patients used topical treatments only. Corticosteroid and emollient were the most commonly used topical treatments in 101 (52.3%) patients followed by vitamin D_3 analog and emollient in 59 (30.6%) patients. Methotrexate was the most common systemic therapy used in 60 (31.1%) of the patients (Table 3).

Psoriasis vulgaris was the most common type in 139 69.5%) patients. Erythrodermic psoriasis was detected in 16 (8%) patients (Table 4).

Table 2 Disease characteristics of studied patients

Parameters	Category	*N*=200 [*n* (%)]
Age at onset (years)	Mean±SD	35.82±17.9
	Median (range)	34 (2–75)
Onset	Acute	18 (9)
	Gradual	182 (91)
Course	Progressive	150 (75)
	Regressive	5 (2.5)
	Intermittent	42 (21)
	Stationary	3 (1.5)
Disease duration (years)	Mean±SD	6.99±3.9
	Median (range)	4 (0.1–33)
	Asymptomatic	21 (10.5)
Symptoms	Itching	144 (72)
	Burning sensations	35 (17.5)

Table 3 Therapeutic history of psoriatic patients

Parameters	Category	*N*=200 [*n* (%)]
Previous treatment	Newly diagnosed (no treatment)	7 (3.5)
	Topical only	72 (36)
	Topical+systemic	84 (42)
	Topical+phototherapy (NB UVB)	37 (18.5)
Type of topical treatment (*N*=193)	Corticosteroid	15 (7.8)
	Corticosteroid+emollient	101 (52.3)
	Keratolytic+emollient	3 (1.6)
	Vitamin D_3 analog +emollient	59(30.6)
	Tar+emollient	5 (2.6)
	Calcineurin inhibit +emollient	8 (4.1)
	Emollient only	2 (1)
	NB UVB	37 (19.2)
Type of systemic treatment (*N*=70)	Methotrexate	60 (31.1)
	Acitretin	2 (1)
	Azathioprine	5 (2.6)
	Biological therapy	3 (1.6)

NB UVB, narrowband ultraviolet B.

Regarding aggravating factors of psoriasis, seasonal variation was the most common exacerbating factor in 103 (51.5%) of the patients. Winter exacerbation was found in 94 (48%). Stress was detected in 41 (21%) of the patients. Medications represented 20.4% of exacerbating factors, where β blockers were the most commonly used drug in 13 (7%) of the patients (Table 5).

General body characteristics of the studied patients

The mean±SD weight of psoriasis patients was 74.93 ±18.8 kg and height (166.10±11.9 cm). The mean BMI was 26.74±5.3. Central obesity was detected in 54.5% of patients (Table 6).

Table 4 Clinical types of psoriasis of the studied patients

Parameters	*N*=200 [*n* (%)]
Psoriasis vulgaris	139 (69.5)
Guttate psoriasis	11 (5.5)
Nail psoriasis	14 (7)
Pustular psoriasis	7 (3.5)
Annular generalized pustular psoriasis	3 (1.5)
Palmoplantar pustular psoriasis	1 (0.5)
Pustular psoriasis in children	1 (0.5)
Impetigo herpetiformis	2 (1)
Erythrodermic psoriasis	16 (8)
Palmoplantar psoriasis	8 (4)
Inverse psoriasis	3 (1.5)
Sebopsoriasis	1 (0.5)

Table 5 Aggravating factors of psoriasis

Parameters	Category	*N*=200 [*n* (%)]
History of exacerbating factors	No	4 (2)
	Yes	196 (98)
Seasonal variation (*N*=103)	Winter	94 (48)
	Summer and sun exposure	9 (5)
Stress		41 (21)
Infection (*N*=12)	Tonsillitis	11 (5.5)
	Candida	1 (0.5)
Medication (*N*=40)	ACEIs	7 (3.5)
	Ca channel blocker	6 (3)
	β-blocker	13 (7)
	Systemic steroid (sudden withdrawal)	12 (6)
	Tetracycline	1 (0.5)
	NSAIDs	1 (0.5)
Skin trauma		7 (3.5)
Smoking		7 (3.5)
Multiple factors		39 (20)

ACEIs, angiotensin-converting enzyme inhibitors.

The most common affected sites by psoriasis

The most commonly affected sites by psoriasis were upper limbs in 156 (78%) patients, followed by lower limbs in 155 (77.5%) and then nails in 130 (65%).

Oral lesions were found in 39/200 (19.5%) psoriasis patients. The most common oral lesion was geographic tongue in 19/39 (49%) patients. Conjunctivitis and dryness were the most common ocular manifestations and were detected in 94.4 and 19.4%, respectively (Table 7).

Nail affection was found in 130 (65%) of psoriasis patients, where 14 (11%) of them had only nail psoriasis and 116 (89%) had nail affection as part of psoriatic lesions. Nail changes were detected in 120/

130 (92%) in fingernails. Mixed nail changes were found in 76/130 (58.5%) of the patients followed by pitting in 48 (37%) patients (Table 8).

Joint affections in psoriasis

As regards joint affection, 25/200 (12.5%) of the psoriasis patients had joint affection. Large joints were the most common affected one in 12/25 (48%). Symmetric PSA was detected in 7/25 (28%) patients (Table 9).

Laboratory investigations of the studied sample

Anemia (iron-deficiency anemia) was found in 31% of the patients. The mean level (±SD) of ESR in the first hour was 28.50±21.1. Hepatitis C virus (HCV) infection was detected in nine (4.5%) of psoriasis patients (Table 10).

Associated comorbidities with psoriasis

Liver diseases were comorbidities associated with 29.5% of psoriasis patients. Diabetes mellitus (type 2) was detected in 39 (19.5%) patients. MetS and stress were detected in 36 and 21% of patients, respectively (Table 11).

Table 6 General body characteristics of psoriatic patients

Parameters	Category	*N*=200
Weight (kg)	Mean±SD	74.93±18.8
	Median (range)	76.5 (15–131)
Height (cm)	Mean±SD	166.10±11.9
	Median (range)	168.5 (100–190)
BMI	Mean±SD	26.74±5.3
	Median (range)	26 (13–42)
Waist circumference (cm)	Mean±SD	97.79±20.2
	Median (range)	100 (20–170)
Central obesity [*n* (%)]	No	91 (45.5)
	Yes	109 (54.5)

Table 8 Nail affection in psoriasis patients

Parameters	*N*=200 [*n* (%)]
No affection	70 (35)
Affected	130 (65)
Nail affection	14/130 (11)
Part of other types of psoriasis	116/130 (89)
Site of nail changes	
Fingers	120/130 (92)
Two fingers	9 (7.5)
Ten fingers	111 (92.5)
Seven fingers, two toes	1 (10)
Ten fingers, one toes	1 (10)
20 nails affection	8 (80)
Nail changes	
Pitting	48/130 (37)
Coarse regular pitting	42 (87.5)
Fine pitting	6 (12.5)
Subungual hyperkeratosis	4/130 (3)
Onycholysis	2/130 (1.5)
Mixed nail changes	76/130 (58.5)

Table 7 Affected sites, oral, and eye lesions of the studied patients

Parameters	Category	*N*=200 [*n* (%)]
Sites of affection		
Head and neck (*N*=119)	Scalp	119 (59.5)
	Face	52 (26)
Upper limbs (*N*=156)		156 (78)
	Palms	31 (15.5)
Lower limbs (*N*=155)	Soles	155 (77.5)
		25 (12.5)
Trunk		81 (40.5)
Nail		130 (65)
Buttock and genitalia		42 (21)
Flexural sites		2 (1)
Oral lesions		
No affection, 161 (80.5)	Geographic tongue	19 (49)
Yes, 38 (19.5)	Fissure tongue	3 (8)
	Smoker melanosis	10 (26)
	Oral thrush	4 (10)
	Geographic and fissure tongue	2 (5)
Eye examination		
	No	164 164 (82)
	Yes	36 (18)
	Conjunctivitis	29 (80.5)
	Dryness	2 (5.5)
	Conjunctivitis and dryness	5 (13.8)

Table 9 Joint affection in psoriasis patients

Parameters	*N*=200 [*n* (%)]
No PSA	175 (87.5)
Yes	25 (12.5)
Large joints	12 (48)
Small joints	5 (20)
Large and small joints	8 (32)
Symmetric PSA	7 (28)
Asymmetric PSA	3 (12)
Distal interphalangeal predominance PSA	4 (16)
Spondylitis PSA	4 (16)
PSA mutilans	3 (12)

Table 10 Laboratory characteristics of the cases

Parameters	Category	*N*=200 [*n* (%)]
CBC (HGB)	Normal	138 (69)
	Anemic	62 (31)
ESR (1st hour)	Mean±SD	28.50±21.1
	Median (range)	20 (4–110)
CRP	Normal	116 (58)
	Abnormal	84 (42)
FBG	Normal	170 (85)
	Hyperglycemia	30 (15)
TGs	Normal	110 (55)
	Hypertriglyceridemia	90 (45)
HDL	Normal	83 (41.5)
	Hypo	117 (58.5)
RF	Positive	25 (12.5)
	Negative	5 (2.5)
HCV	Negative	191 (95.5)
	Positive	9 (4.5)
HBV	Negative	199 (99.5)
	Positive	1 (0.5)

CBC, complete blood picture; CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; FBG, fasting blood glucose; HBV, hepatitis B virus; HCV, hepatitis C virus; HDL, high-density lipoprotein; HGB, hemoglobin; RF, rheumatoid factor; TGs, triglycerides.

Table 11 Associated comorbidities with psoriasis

Parameters	Category	*N*=200 [*n* (%)]
Cardiovascular disease	No	197 (98.5)
	MI	2 (1)
	RHD	1 (0.5)
	HTN	37 (18.5)
Chest disease	No	194 (97)
	COPD	2 (1)
	Asthma	4 (2)
Liver disease	No	141 (70.5)
	Fatty liver	40 (20)
	Liver cirrhosis	9 (4.5)
	Viral hepatitis	10 (5)
	HCV and HBV	
Central nervous system	No	195 (97.5)
	Epilepsy	2 (1)
	Stroke	1 (0.5)
	MR	1 (0.5)
	Transverse myelitis	1 (0.5)
DM	DM (type 2)	39 (19.5)
MetS	Yes	72 (36)
	No	128 (64)
Psychological impairment	No	8 (4)
	Yes	
	Stress	42 (21)
	Sad	25 (12.5)
	Depression	167 (83.5)

COPD, chronic obstructive pulmonary disease; DM, diabetes mellitus; HBV, hepatitis B virus; HCV, hepatitis C virus; HTN, hypertension; MetS, metabolic syndrome; MI, myocardial infarction; RHD, rheumatic heart disease.

Discussion

In the current study, the mean age of psoriasis patients was 42.83±17.3 years, which is in agreement with that reported by El-Komy *et al.* [16] in Cairo, who reported the mean age to be 39.3±17.9 years. We found the mean age at onset of psoriasis was 35.82±17.9 years. Ejaz *et al.* [17] in Pakistan reported that the mean age of onset was 30.48±14.37 years.

Male predominance was detected in 60% of the cases, which is in agreement with El-Komy *et al.* [16] who found that 56% of patients were males, but it is not in agreement with Egeberg *et al.* [18] who reported a female predominance in Denmark in 53.2%.

In this study, psoriasis was more common in rural than in urban areas (53 vs. 47%, respectively). This is in agreement with that reported in China by Li *et al.* [19] in which the ratio of urban to rural sites was 29 : 31, but it is dissimilar to tat reported by Khadhim and Ali [20], who found that a higher percentage of psoriasis patients in urban areas (84.2%) than in rural residency (15.8%).

In this study, 44% of the psoriasis patients were illiterate and 32% were secondary educated (high school). This is not in agreement with Lee *et al.* [21], who reported a prevalence of psoriasis at 50.7% in high school patients and 49.2% in college going patients.

Psoriasis in working people represented 53% of the cases, 19.5% not working and18.5% housewives. Chiriac *et al.* [8] in a study done in the north-eastern part of Romania revealed that the high prevalence of psoriasis in working people was 65.74%, 12.06% retired persons, 9.06% pupils, 4.37% home workers (housewives), and 8.77% unemployed people.

Married psoriatic patients represented 73%, which is similar to Lee *et al.* [21] who found the prevalence of married psoriasis patients in Korea to be 70.3%.

In this study, 47% of the psoriatic patients were smokers and 56.6% of them were heavy smokers. Zindancı *et al.* [22] noted that 35.7% of psoriasis patients were smokers. Li *et al.* [23] reported that the risk of psoriasis was particularly increased in heavy smokers.

Family history of psoriasis was positive in 66%. Of the patients, 68% had a positive history of consanguinity, and the most common detected degree of consanguinity was first degree in 39.7% of the patients. Altobelli *et al.* [24] in Italy detected that a family history of psoriasis was positive in 40.7% of patients. Chen *et al.* [25] detected that more than 20% of patients had a positive family history, which was more frequent in first-degree relatives than in second-degree and third-degree relatives.

Of the patients with psoriasis, body surface area was mild in 17%, moderate in 26%, and severe in 57%, which is similar to Gelfand *et al.* [26], who found patients from the United States with mild psoriasis in 14%, moderate psoriasis in 18%, and with severe psoriasis in 56%.

In this study, 96.5% of psoriasis patients received therapy. Topical therapy only was used by 36%. The most commonly used topical therapy was a combination (topical corticosteroid+emollient) in 58%. Systemic medications combined with topical were used by 42% of the patients. Parental methotrexate was the most commonly used systemic medication in 31.1% and biologic only (ustekinumab) in 1.6%.

Akeshita *et al.* [27] reported that most of the patients (83.5%) had at least one request for psoriasis therapy and 16.5% received no therapy. Topical therapies were used by 76.6%, the majority of whom received topical corticosteroids (97.9%). Phototherapy was used by 7%. Oral systemic medications were used by 14.3%, the majority of them used oral methotrexate (85.7%). Biologics were received by 10.2%.

Of psoriatic patients, psoriasis vulgaris was the most common type in 69.5%, erythrodermic psoriasis in 8%, nail psoriasis in 7%, guttate psoriasis in 5.5%, palmoplantar psoriasis in 4%, and pustular psoriasis in 3.5%. Morrone *et al.* [28] in Tigray and Ethiopia observed that the most common clinical form is plaque psoriasis in 62.9%, followed by guttate in 13.9%, pustular in 9.5%, inverse in 7.5%, and erythrodermic in 6.1%.

In the current study, 98% of psoriasis patients had a history of aggravating factors. Seasonal variation was the most common exacerbating factor of psoriasis and was detected in 51.5% of patients (winter exacerbation was found in 48% of patients). Stress was detected in 21% of the patients. Infection was observed in 6.1%. Skin trauma and smoking were detected in 3.5% of the patients equally. Multiple factors were found in 20% of the patients.

Chen *et al.* [25] in China observed that the most frequently aggravating factor in psoriasis was season change in 60.2% of the patients and aggravating factors were related to winter season in 48.8%, followed by psychological stress in 34.5%, infection (pharyngitis) in 27.4%, dietary factors in 23.7%, alcohol consumption in 18.4%, and smoking in 5.2%.

Medications represented 20.4% of exacerbating factors of psoriasis, where β blockers were the most commonly used drug in 17% of the patients. Chen *et al.* [25] reported that aggravation of skin lesions in psoriasis due to medication was 5.3%.

We found the mean±SD weight of patients with psoriasis was 74.93±18.8 kg and BMI was 26.74 ±5.3. Central obesity was detected in 54.5% of patients. El-Komy *et al.* [16] detected the mean BMI for the psoriasis patients as 28.0±7.3.

In the current study, 12.5% of the patients had psoriatic arthropathy. Large joints were the most commonly affected one in 48%. Symmetric PSA was detected in 28%, followed by distal interphalangeal predominance and spondylitis in 16% for each. Braga *et al.* [29] in Brazil reported that the prevalence of the different forms of joint involvement was 68.9% for symmetric polyarticular arthritis, 22% for asymmetric oligoarthritis, and 22.2% for spondylitis.

Nail affection was detected in 65% of the patients (11% of them only nail psoriasis and 89% as a part of psoriatic lesions). As regards the site, nail changes were detected in 92% of fingernails. Mixed nail changes were found in 58.5% of the patients followed by regular coarse pitting in 37%, subungual hyperkeratosis in 3%, and then onycholysis in 1.5%. Mohd Affandi *et al.* [5] found 57.1% of psoriasis patients had nail involvement; nail pitting was the most common form in 72.3%, followed

by onycholysis in 48.3%, nail discoloration in 29.4%, subungual hyperkeratosis in 12.6%, and total nail dystrophy in 4.8%.

Iron-deficiency anemia was detected in 31% of patients. The mean level (±SD) of ESR in the first hour was 28.50±21.1. Gokalp [30] detected the mean ESR value of psoriasis patients was 12.96±5.64. CRP was elevated in 42% of psoriasis patients. Peralta *et al.* [31] reported significantly higher levels of CRP in psoriasis patients with a *P* value less than 0.01.

This study observed elevated FBG levels in 15% of psoriasis patients, hypertriglyceridemia in 45%, and low HDL in 58.5%. Praveenkumar *et al.* [32] detected elevated blood glucose levels in 50% of psoriasis patients, 40% of psoriasis patients with hypertriglyceridemia, and 86.7% with reduced HDL levels.

Also, this study detected HCV infection in 4.5% of psoriasis patients, but hepatitis B virus was found only in 0.5% (all hepatitis patients were on treatment) which is similar to El-Komy *et al.* [16], who reported that 5.5% of patients had either active HCV or had received recent treatment for it.

MetS was detected in 36% of psoriasis patients. Love *et al.* [33] reported that the prevalence of MetS in patients with psoriasis was 40%, which presented as a double percent in psoriatic patients compared with non-psoriatic control individuals.

As regards associated comorbidities with psoriasis, comorbidities were found in 74.5% of patients. El-Komy *et al.* [16] reported that one or more comorbidities were found in 38.3% of patients.

Liver diseases were found in 29% of psoriasis patients followed by type 2 diabetes mellitus in 19.5% and hypertension in 18.5% of psoriasis patients. El-Komy *et al.* [16] reported that hypertension and diabetes were the most common associated comorbidities with psoriasis (11.9 and 10.9% of all patients, respectively).

Conclusion

Psoriasis is a chronic systemic disease with an unpredictable course. Teamwork with other specialists (rheumatology, ear, nose and throat, ophthalmology, tropical and gastroenterology, internal medicine, nutrition, cardiology, and psychiatry) is necessary for early detection of any associated comorbidities and to improve patient quality of life. Patients should know that making simple lifestyle changes, such as stop smoking, weight reduction, regular exercise, stopping any drug exacerbating psoriasis, and eating a balanced diet to improve their disease. Improved psychosocial status of the patients may considerably enhance the management of psoriasis.

CBC, ESR, and CRP are inexpensive important investigations for psoriasis patients. Serology for HCV and hepatitis B virus should be done in psoriasis patients as hepatitis infection is epidemic in Egypt and it affects its management. We recommend further community-based studies in Egypt to improve the health planning of psoriasis.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1 Kamiya K, Kishimoto M, Sugai J, Komine M, Ohtsuki M. Risk factors for the development of psoriasis. Int J Mol Sci 2019; 20:4347.

2 Naldi L. Epidemiology of psoriasis. Curr Drug Targets Inflamm Allergy 2004; 3:121–128.

3 Kurd SK, Gelfand JM. The prevalence of previously diagnosed and undiagnosed psoriasis in US adults: results from NHANES 2003-2004. J Am Acad Dermatol 2009; 60:218–224.

4 Cimmino MA. Epidemiology of psoriasis and psoriatic arthritis. Reumatismo 2007; 59:19–24.

5 Mohd Affandi A, Khan I, Ngah Saaya N. Epidemiology and clinical features of adult patients with psoriasis in Malaysia: 10-year review from the Malaysian Psoriasis Registry (2007-2016). Dermatol Res Pract 2018; 2018:4371471.

6 Tsai TF, Wang TS, Hung ST, Tsai PI, Schenkel B, Zhang M, *et al.* Epidemiology and comorbidities of psoriasis patients in a national database in Taiwan. J Dermatol Sci 2011; 63:40–46.

7 Hawro T, Zalewska A, Hawro M, Kaszuba A, Królikowska M, Maurer M. Impact of psoriasis severity on family income and quality of life. J Eur Acad Dermatol Venereol 2015; 29:438–443.

8 Chiriac A, Solovan C, Pinteala T, Chiriac A, Brzezinski P, Foia L. The relationship between psoriasis and specific professional activities or occupation-induced skin diseases. Shiraz E Med J 2014; 15: 20591.

9 Christophers E. Psoriasis-epidemiology and clinical spectrum. Clin Exp Dermatol 2001; 26:314–320.

10 Haddad A, Zisman D. Comorbidities in patients with psoriatic arthritis. Rambam Maimonides Med J 2017; 8:e0004.

11 Feng X, Qian Z, Zhang B, Guo E, Wang L, Liu P, *et al.* Number of cigarettes smoked per day, smoking index, and intracranial aneurysm rupture: a case-control study. Front Neurol 2018; 9:380.

12 Aggarwal A, Aggarwal S, Sharma V. Metabolic syndrome and coronary artery disease in Indians younger than 40 years. J Clin Endocrinol Metab 2012; 2:39.

13 Hamilton W, Lancashire R, Sharp D, Peters TJ, Cheng KK, Marshall T. The importance of anaemia in diagnosing colorectal cancer: a case-control study using electronic primary care records. Br J Cancer 2008; 98:323–327.

14 Wiley JF, Carrington MJ. A metabolic syndrome severity score: a tool to quantify cardio-metabolic risk factors. Prev Med 2016; 88:189–195.

15 Krejcie RV, Morgan DW. Determining sample size for research activities. Educ Psychol Meas 1970; 30:607–610.

16 El-Komy MHM, Mashaly H, Sayed KS, Hafez V, El-Mesidy MS, Said ER, *et al.* Clinical and epidemiologic features of psoriasis patients in an Egyptian medical center. JAAD Int 2020; 1:81–90.

17 Ejaz A, Raza N, Iftikhar N, Iftikhar A, Farooq M. Presentation of early onset psoriasis in comparison with late onset psoriasis: a clinical study from Pakistan. Indian J Dermatol Venereol Leprol 2009; 75:36–40.

18 Egeberg A, Skov L, Gislason GH, Thyssen JP, Mallbris L. Incidence and prevalence of psoriasis in Denmark. Acta Derm Venereol 2017; 97:808–812.

19 Li J, Yu M, Wang YW, Zhang JA, Ju M, Chen K, *et al.* Prevalence of psoriasis and associated risk factors in China: protocol of a nationwide, population-based, cross-sectional study. BMJ Open 2019; 9:e027685.

20 Khadhim MM, Ali AI. Associations of specific HLA-C loci and sociodemographic factors with the prevalence of type I psoriasis in Iraqi patients. Nano Biomed Eng 2018; 10:328–333.

21 Lee YW, Park EJ, Kwon IH, Kim KH, Kim KJ. Impact of psoriasis on quality of life: relationship between clinical response to therapy and change in health-related quality of life. Ann Dermatol 2010; 22:389–396.

22 Zindancı I, Albayrak O, Kavala M, Kocaturk E, Can B, Sudogan S, *et al.* Prevalence of metabolic syndrome in patients with psoriasis. Sci World J 2012; 2012:312463.

23 Li W, Han J, Choi HK, Qureshi AA. Smoking and risk of incident psoriasis among women and men in the United States: a combined analysis. Am J Epidemiol 2012; 175:402–413.

24 Altobelli E, Petrocelli R, Marziliano C, Fargnoli MC, Maccarone M, Chimenti S, *et al.* Family history of psoriasis and age at disease onset in Italian patients with psoriasis. Br J Dermatol 2007; 156:1400–1401.

25 Chen K, Wang G, Jin H, Xu J, Zhu X, Zheng M, *et al.* Clinic characteristics of psoriasis in China: a nationwide survey in over 12000 patients. Oncotarget 2017; 8:46381–46389.

26 Gelfand JM, Stern RS, Nijsten T, Feldman SR, Thomas J, Kist J, *et al.* The prevalence of psoriasis in African Americans: results from a population-based study. J Am Acad Dermatol 2005; 52:23–26.

27 Akeshita J, Gelfand JM, Li P, Pinto L, Yu X, Rao P, *et al.* Psoriasis in the US medicare population: prevalence, treatment, and factors associated with biologic use. J Invest Dermatol 2015; 135:2955–2963.

28 Morrone A, Dell'Anna ML, Cristaudo A, Wubayehu T, Godefay H, Barnabas GA, *et al.* Psoriasis in Tigray, Ethiopia: focusing on available treatments. Dermatol Ther 2020; 35:e14718.

29 Braga MV, de Oliveira SC, Vasconcelos AHC, Lopes JR, de Macedo Filho CL, Ramos LMA, *et al.* Prevalence of sacroiliitis and acute and structural changes on MRI in patients with psoriatic arthritis. Sci Rep 2020; 10:11580.

30 Gokalp H. Effect of psoriasis on inflammation parameters: Controlled study. Turk Arch Dermatol Venereolgy 2018; 52:91–94.

31 Peralta C, Hamid P, Batool H, Al Achkar Z, Maximus P. Psoriasis and metabolic syndrome: comorbidities and environmental and therapeutic implications. Cureus 2019; 11:e6369.

32 Praveenkumar U, Ganguly S, Ray L, Nanda SK, Kuruvila S. Prevalence of metabolic syndrome in psoriasis patients and its relation to disease duration: a hospital based case-control study. J Clin Diagn Res 2016; 10:WC01–WC05.

33 Love TJ, Qureshi AA, Karlson EW, Gelfand JM, Choi HK. Prevalence of the metabolic syndrome in psoriasis: results from the National Health and Nutrition Examination Survey, 2003-2006. Arch Dermatol 2011; 147:419–424.