Clinical and epidemiological profile of psoriasis patients: a retrospective study in tertiary medical centers, Mangalore, India

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Background: Psoriasis is an immune-mediated chronic skin disorder. Information regarding its clinical and epidemiological manifestations is limited in some parts of Asia. This study was conducted to determine the risk factors, clinical presentation, and management of psoriasis among patients in Mangalore, India.

Methods: The medical records of 225 psoriasis patients over the past ten years (from January 2009 till March 2019) were examined by the investigators. Data were collected using a semi-structured form.

Results: The mean age at diagnosis of psoriasis was 42.2 ± 16.0 years. Nail psoriasis and psoriatic arthritis (PsA) were present in 66 (29.3%) and 21 (9.3%) patients, respectively. Relapse of psoriasis was seen more among patients with a history of disease exacerbation in winter (P = 0.009) or in rainy seasons (P = 0.031). Systemic therapy with methotrexate and topical therapy with steroids were used in the management of 52 (23.1%) and 72 (32%) patients, respectively. Phototherapy (n = 11) was the most common modality used among the 18 patients with extensive psoriasis. Co-morbidities like diabetes mellitus (P = 0.02) and complications like PsA (P = 0.008) were associated with greater disease durations among the patients.

Conclusion: The proportion of patients with extensive psoriasis was high in the current setting probably because of delayed diagnosis. Awareness about the disease and its clinical manifestations might help in its early identification. Seasonal exacerbation was an important risk factor for psoriasis and it was associated with its relapse. The most common management modalities were topical steroids for psoriasis and phototherapy for extensive psoriasis.

Keywords: psoriasis, risk factors, psoriatic arthritis

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INTRODUCTION

Psoriasis is an immune-mediated chronic skin disorder. Its prevalence in the world ranges from 2 to 3% [1]. The disease is known for its variations in distribution, periodicity of flares, and duration [2]. The degree of impairment in quality of life (QoL) due to psoriasis is comparable with other major diseases like diabetes mellitus (DM), ischemic heart disease, and cancer [3]. The affected patients are reported to have multisystem disorders and several other comorbidities, complicating the

management of this condition [4]. Information regarding its clinic-epidemiological manifestations is limited in parts of Asia [5]. Hence, this study was conducted to determine the risk factors, clinical presentation, and management of psoriasis.

PARTICIPANTS AND METHODS

Participants and study design

This retrospective study was done in March 2019 at two tertiary care hospitals in Mangalore, India. The medical records of confirmed patients with psoriasis over the past ten years (from January 2009 till March 2019) were examined by the investigators.

Assessment

Data were recorded in a semi-structured form. Content validation of the form was done by the subject experts. Early onset psoriasis was defined as patients diagnosed with psoriasis before the age of 30 years. The duration of disease was defined as the period between disease diagnosis and study recruitment. The winter season, in the current setting, prevailed from December to February. The patients were classified to have limited psoriasis when the body surface area (BSA) involvement was ≤ 10% and extensive psoriasis when it was > 10% [6].

Statistical methods

The data were analyzed using SPSS version 17 (SPSS Inc, Chicago, Illinois). The unpaired t-test, chi-squared test, Fisher's exact test, and Mann Whitney U test were used to test association; statistical significance was considered at $P < 0.05$.

Ethical considerations

The approval of the Institutional Ethics Committee was obtained before the commencement of this study. Permission to conduct the study was taken from the medical superintendents of the hospitals.

RESULTS

Out of the 225 psoriasis patients, 151 (67.1%) were from the government hospital. The mean age of the patients was 46.7 ± 15.6 years, ranging from 7 to 85 years. The mean age at diagnosis was 42.2 ± 16.0 years; it ranged from 6 to 83 years (Table 1). Early onset of psoriasis was observed among 49 (21.8%) patients, including 35 (18.4%) male and 14 (40%) female patients ($X^2 = 8.1$; $P = 0.004$).

The mean age at diagnosis was 43.4 ± 15.1 years among males (n = 190) and 35.8 ± 19.3 years among the 35 females (t = 2.627; $P = 0.009$).

The mean duration of disease (MDD) was 4.5 ± 7.1 years, ranging from one month to 47 years. The median duration of psoriasis was two years (IQR 0.5, 5).

Among the patients aged ≤ 14 years, 4 (36.4%) were males and 7 (63.6%) were females, while

Table 1. Socio-demographic distribution of psoriasis patients

Characteristic	Number	Percentage
Age (years)		
6-10	2	0.9
11-14	6	2.7
15-20	5	2.2
21-30	26	11.6
31-40	41	18.2
41-50	55	24.4
51-60	48	21.3
61-70	34	15.1
>70	8	3.6
Age at diagnosis (years)		
6-10	7	3.1
11-14	4	1.8
15-20	8	3.5
21-30	41	18.2
31-40	52	23.1
41-50	48	21.4
51-60	32	14.2
61-70	27	12.0
>70	6	2.7
Gender		
Male	190	84.4
Female	35	15.6
Marital status (n = 55)		
Married	42	76.4
Unmarried	13	23.6
Occupation (n = 37)		
Unskilled	14	37.9
Skilled	10	27.0
Businessman/House wife/ Student	13	35.1
Place of residence		
Urban	168	74.7
Rural	57	25.3
Total	225	100.0

among the remaining patients aged ≥ 15 years, 186 (86.9%) were males and 28 (13.1%) were females ($X^2 = 20.354$; $P < 0.001$).

Among the patients, 24 (10.7%) reported exacerbation of the disease during winter (Table 2).

General signs including scales, plaques, and erythema were present among 196 (87.1%), 163 (72.4%), and 129 (57.3%) patients, respectively. Other signs of psoriasis seen among the patients were scaly plaques on the scalp (26.7%), hyperpigmentation of the skin (20%), the Auspitz sign (8.4%), exfoliation (6.2%), hyperkeratosis (5.8%), pedal edema (5.3%), pustules (4.9%), papules (4.0%), the Koebner phenomenon (2.7%), hypopigmented halos (1.3%), scaly plaques (0.9%), and skin excoriation (0.4%). Pruritus and red skin patches were present among 164 (72.9%) and 38 (16.9%) patients, respectively.

The various types of psoriasis that were noticed among the patients were chronic plaque psoriasis (CPP) [n = 167 (74.2%)], palmoplantar psoriasis [n = 21 (9.3%)], erythrodermic psoriasis [n = 11 (4.9%)], generalized pustular psoriasis [n = 8 (3.5%)], guttate psoriasis [n = 7 (3.1%)], unstable plaque psoriasis [n = 6 (2.7%)] and pustulosis palmaris et plantaris [n = 2 (0.9%)]. Scalp, flexural, and napkin psoriasis were each present in one patient.

Chronic plaque psoriasis was present among 146 (76.8%) of the 190 males and 21 (60%) of the 35 females ($X^2 = 4.38$; $P = 0.036$). Guttate psoriasis was present in three (1.6%) male and four (11.4%) female patients ($P = 0.0123$).

Disease relapse was present in 40 (17.8%) patients. Among them, six patients had multiple episodes of relapse. The MDD among patients with relapse (n = 40) was found to be four years (IQR 0.3, 9.5) in comparison with two years (IQR 0.2, 5) among those without relapse (n = 185) ($Z = 2.274$, $P = 0.023$).

Disease relapse was present in 8 (33.3%) out of the 24 patients with a history of exacerbation in comparison with 32 (13.3%) out of 241 without a history of exacerbation during the winter season ($X^2 = 6.85$; $P = 0.009$). Similarly, out of the two patients with a history of exacerbation of psoriasis during rainy seasons, both (100%) had relapse, whereas 38 (17%) patients had relapse but lacked such a history ($P = 0.031$).

The most common initial sites of involvement of psoriasis were the legs (20%), hands (9.8%), scalp (9.3%), and trunk (8.4%). Typically, psoriasis involvement was most prominent in the hands (80.9%), legs (78.7%), trunk (72.9%), and scalp (57.3%).

Among the children (n = 11), the most common type of psoriasis was CPP (72.7%), and the most common sites of involvement were the hands and legs (63.6%). Single-site involvement was seen in six (2.7%) patients, all of whom were in the pediatric age group. Four of them had involvement of the scalp and two had trunk involvement.

Out of the 24 psoriatic patients with known body surface area (BSA) involvement status, 18 (75%) had the extensive type of psoriasis. The mean BSA involvement was 32.5 ± 23.8%.

Nail involvement was present among 66 (29.3%) psoriasis patients (Table 3).

Psoriatic arthritis (PsA) was present among 21 (9.3%) patients (Table 4). The left knee was the most commonly (47.6%) involved joint among

Table 2. Distribution of risk factors of psoriasis among the patients (n = 225)

Risk factor	Number	Percentage
Family history of psoriasis		
Present†	4	1.8
Personal habits		
Smoking	25	11.1
Alcoholism	41	18.2
Medications‡	3	1.3
Seasonal exacerbations		
Winter	24	10.7
Summer	6	2.7
Rainy season	2	0.9
Others#	3	1.3

†First degree relative 1, Second degree relative 3 ‡Propranolol 1, Captopril 1, Ayurvedic medications 1, # Stress 1, Upper respiratory tract infection 1, Change of place 1

Table 3. Pattern of nail involvement among the psoriasis patients (n = 66).

Characteristic	Number	Percentage
Pitting	52	78.8
Partial onycholysis	28	42.4
Subungal hyperkeratosis	19	28.8
Onychodystrophy	17	25.7
Longitudinal ridging	11	16.7
Nail discoloration	10	15.1
Oil drop sign	3	4.5
Thickening of nail plate	2	3.0
Complete onycholysis	2	3.0
Onychomadesis	2	3.9
Paronychia	1	1.5
Koilonychia	1	1.5
Lamellar splitting	1	1.5

Table 4. Pattern of joint involvement in psoriatic arthritis (n = 21)

Characteristic	Number	Percentage
Site of joint involvement		
Left knee	10	47.6
Right knee	9	42.9
Right ankle	5	23.8
Left ankle	5	23.8
Right distal interphalangeal (DIP) joint	5	23.8
Left DIP joint	5	23.8
Right proximal interphalangeal (PIP) joint	3	14.3
Left PIP joint	3	14.3
Right shoulder	3	14.3
Right wrist	3	14.3
Right elbow	2	9.5
Left elbow	2	9.5
Left wrist	2	9.5
Hip	2	9.5
Right toes	1	4.8
Left toes	1	4.8
Left shoulder	1	4.8
Number of joints involved		
Monoarticular	1	4.8
Oligoarticular (2 to 4)	17	80.9
Polyarticular (>4)	3	14.3
Pattern of joint involvement		
Symmetrical	18	85.7
Asymmetrical	2	9.5
Both	1	4.8
Involvement of joints in upper limb	5	23.8
Involvement of only DIP in upper limb	2	9.5
Involvement of DIP/PIP in upper limb	3	14.3
Involvement of joints in lower limb	1	4.8

PsA patients. Symmetrical (85.7%) and oligo-articular (80.9%) involvement were the most common presentations (Table 4). All three (14.3%) patients with polyarticular joint involvement had symmetrical distributions.

The MDD among patients with PsA (n = 21) was four years (IQR 1, 13.5) in comparison with two years (IQR 0.25, 5) among those without PsA (n = 204) (Z = 2.664; $P = 0.008$).

Comorbidities such as DM and hypertension were present among 21 (9.3%) and 17 (7.5%) patients, respectively. Among other autoimmune diseases, rheumatoid arthritis was present in two patients and one patient had pemphigus.

The MDD among psoriasis patients with DM (n = 21) was five years (IQR 0.5, 12) in comparison with two years (IQR 0.25, 5) among those without DM (n = 204) (Z = 2.332; $P = 0.02$).

One or more comorbidities were present among 10 (47.6%) patients with PsA in comparison to 48 (23.5%) without PsA ($X^2 = 5.775$; $P = 0.016$).

The various systemic drugs used in the management of psoriasis were methotrexate (23.1%), cetirizine (23.1%), folic acid (20.4%), chlorpheniramine maleate (19.1%), calcium (12.9%), prednisolone (6.2%), protein supplements (3.5%), iron (2.7%), apremilast (0.9%), vitamin D analogues (0.9%), and dapsone (0.4%). Phototherapy with narrowband ultraviolet B (NBUVB) was given to 37 (16.4%) patients. Topical therapy for psoriasis constituted steroid creams (32%), petroleum jelly (25.8%), salicylic acid (23.1%), moisturizers (17.8%), liquid paraffin (15.5%), coal tar lotions/shampoos (4.4%), and topical vitamin D (1.3%). Among the alternative systems of management, ayurvedic medicine (10.2%), homeopathy (2.2%), and conservative management with a high-protein diet (0.4%) were tried among the patients.

Among the 18 patients with extensive psoriasis, systemic therapy with methotrexate, levocetirizine, and apremilast were used for management among four, four, and two patients, respectively. Ten (55.5%) received NBUVB phototherapy. Among topical agents, corticosteroid creams, liquid paraffin, and petroleum jelly were used for management among ten, five, and two patients with extensive psoriasis, respectively; only two such patients used coal tar with salicylic acid or plain salicylic acid preparations. The management of extensive psoriasis included usage of phototherapy and topical therapy among eight patients, isolated systemic therapy among four individuals, systemic therapy and topical therapy among three patients, isolated phototherapy for one patient, combined phototherapy, topical, and systemic therapy for one patient, and isolated topical therapy in one patient.

The treatment outcome was known for 179 patients. Among them, 170 (95%) had improvement while the rest had no improvement in their disease condition in spite of treatment.

DISCUSSION

The mean age at diagnosis of psoriasis in this study was 42.2 years. This was much later than observations of previous studies, where it ranged from 26.4 to 38.3 years [7-11]. The mean age at diagnosis

of psoriasis was earlier among females in previous studies [5,8,9] as also noted here.

The MDD was reported to be 3.6 [9], 4.5 [6], and 9.1 [12] years in other studies compared to 4.5 years in this study. This indicates the chronicity of the disease with frequent remissions and exacerbations [9].

Most psoriatic patients in this study were unskilled workers. In other studies, the majority of patients with psoriasis were farmers [9,13], housewives [14], and household workers [8].

The common risk factors of psoriasis reported in earlier studies were sunlight exposure (12-46%) [5,8,14,15], stress (8-48.3%) [5,14,15], trauma (27.2%) [8], and seasonal variations (50-72%) [13,14]. Cold-weather and winter exacerbations have been reported in 55.3% [8] and 55% [14] of patients, respectively, while summer exacerbations reportedly occur in 5-19.3% [8,14] of patients. These figures are higher relative to our findings.

The proportion of psoriasis patients with relapses in this study was again better than the 30.7% rate reported by Singh MK *et al.* [8]. In the present study, relapses were seen significantly more among patients who had exacerbations of psoriasis in winter and rainy seasons. Therefore, extra care must be given to such patients as each episode of relapse would prolong the illness and adversely affect their QoL.

The most common initial site of involvement in a study done in Kochi, India was the scalp (28%) followed by the elbow (22%), which diverged from our observations [11]. The most typical sites of involvement in earlier studies were the scalp (49.6% [16]; 79.8% [8]), lower legs (72.6% [12]; 87% [13]), and extensor surfaces (85.3% [7]). This contrasts with the hand involvement among the majority of patients in the present study, which could be because the hands are exposed, easily visible, and highly prone to trauma. In a study done among pediatric patients with psoriasis in Dibrugarh, India [17], the extremities were the most commonly involved sites (65.4%), as supported by our observations.

The proportion of psoriasis patients with nail involvement in this study was 28.4% in comparison with 1.9 to 75% reported elsewhere [5,13,16,18]. The most typical pattern of nail involvement was nail pitting, as reported among 54% [13] and 72.3% [5] of patients in other studies. The proportion of pediatric patients with nail involvement in the study done in Dibrugarh, India, was 15.4% in comparison with 37.5% in our study [17].

Psoriatic arthritis was present among 9.3% patients in this study and among 0.6% to 31% among patients in other studies [5,9,18-21]. As a progressive condition, a delay in the diagnosis and management of PsA would increase the risk of permanent joint damage and disability [22].

Distal interphalangeal joint (DIP) arthritis was reported elsewhere in 8% [23] of patients, compared with 23.8% of psoriasis patients in our study. It has been observed that typically in PsA, DIP joint involvement features among > 50% patients and rarely presents as an isolated occurrence [24].

The study conducted in Srinagar, India [23], and the Malaysian study [5] reported the polyarticular type of PsA to be more prevalent in contrary to our observations and the findings of another systematic review [25], where the oligoarticular type of PsA was more common. Oligoarticular involvement has been reported to indicate a better prognosis than polyarticular disease [26]. Patients treated for PsA within two years of diagnosis have good prognoses, indicating the importance of its early diagnosis and management [27].

Autoimmune conditions like rheumatoid arthritis and pemphigus were present in a few patients in this study. Several studies have reported bullous pemphigoid [28], vitiligo [8], and Crohn's disease [21] to be common among psoriasis patients.

Patients with PsA had a greater risk of the presence of comorbidities compared to those without joint involvement. This suggests that doctors need to screen for comorbidities when managing patients with PsA. Moreover, the understanding of psoriasis needs to become broadened from merely a dermatological morbidity to a systemic inflammatory process that increases the risk of other comorbidities.

The presence of comorbidities like diabetes mellitus and complications like PsA were associated with greater durations of psoriasis among the patients. This indicates the necessity to monitor comorbidities/complications during disease management.

In this study, greater than 10% BSA involvement of psoriatic lesions was noted in 75% of patients. Other studies have reported the prevalence of the extensive form of psoriasis among 16.3 to 45.9% of patients [5,6,12,15]. The mean BSA involvement in previous studies was 7.4% [6] and 13.1% [12], which are

much lower figures relative to our findings. This means that the proportion of extensive psoriasis patients was more in the current setting, probably because of delayed diagnosis.

From the findings of this study, we conclude that the proportion of extensive psoriasis patients was very high probably because of the elevated age at diagnosis. Therefore, awareness about psoriasis needs to improve in the current setting by educating the patients about its common signs and symptoms. At least 10% of patients had a history of disease exacerbation during the winter season, which was also associated with the relapse of psoriasis. These patients, therefore, need to be advised appropriate care during cold seasons to avoid recurrences of psoriasis. Comorbidities like DM and complications like PsA were associated with greater disease duration. This indicates the necessity to monitor comorbidities/complications to improve treatment outcomes.

LIMITATION

As a record-based study, this work was subject to availability of information in the medical records.

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Conflict of interest: None declared.

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