ORIGINAL RESEARCH

Clinical and immunogenetic characteristics of psoriatic arthritis: a single-center experience from South India

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Abstract

Aim

The aim of this study was to determine the clinical characteristics and prevalence of HLA B27 in patients with psoriatic arthritis presenting to a tertiary care centre in South India.

Background

Although the prevalence of psoriasis is high in India, there is paucity of data, especially on Ps A.

Materials and mgethods

This retrospective study included 141 patients satisfying the ClASsification criteria for Ps A (CASPAR). Demographic, clinical, and laboratory data of the patients were collected through personal interviews, clinical examination, appropriate investigations, and analysis of case records. HLA-B27 typing by PCR method was done for all patients.

Results

Among the 141 patients, 89 subjects were males and 52 were females, and the male to female ratio was 1.7:1. Polyarthritis (n=51, 36.2%) was the most common Ps A subtype noted during the study, followed by oligoarthritis (n=48, 34%), spondyloarthropathy (n=29, 20.6%), distal interphalangeal (DIP) predominant arthritis (n=25, 7.8%), and arthritis mutilans (n=2, 1.4%). Arthritis preceded skin involvement in 9.2% (n=13) of the cases. Dactylitis was seen in 24.1% (n=34) of the patients. Extra-articular features like enthesitis (n=16, 11.3%) and eye involvement (n=1, 0.7%) were also observed. Deformities were seen in 32.6% (n=46) of the subjects. The most common type of psoriatic skin lesion noted was psoriasis vulgaris (n=119, 84.4%). Nail involvement was seen in 17.7% (n=25) of the patients and it was observed in all subjects with DIP predominant arthritis (100%). Family history of psoriasis was present in 11.3% (n=16) of the patients. The number of patients positive for HLA B27 was 16 (11.3%). Additionally, the antigen positivity was noted in 35.7% (n=10) of the patients with spondyloarthropathy.

Conclusion

Ps A was more common in males. Polyarthritis and oligoarthritis were the most prevalent subtypes. The prevalence of HLA-B27 in our study population was 11.3% and was found to be strongly associated with spondyloarthropathy.

Introduction

Ps A is a chronic inflammatory disease with a broad spectrum of clinical features like dactylitis, enthesitis, inflammatory low backache, nail involvement, and eye manifestations like anterior uveitis and conjunctivitis. In 1973, Moll and Wright classified Ps A into five subtypes: 1. Distal interphalangeal (DIP) arthritis alone 2. Arthritis mutilans (destructive) 3. Symmetric polyarthritis. 4. Asymmetric oligoarthritis and 5. Spondyloarthropathy.[1] The CASPAR group defined this classification more precisely: DIP predominant defined as more than 50% of total joint count being DIP joints; polyarthritis as ≥ five joints involved; oligoarthritis as < five joints involved; arthritis mutilans as destructive form of arthritis associated with

flail joints; and spine predominant Ps A as inflammatory spinal pain, reduced spinal movements, and radiographic sacroiliitis.[2] As per the definition, the term 'symmetric' is no longer used in conjunction with polyarthritis. Previous studies indicate oligoarthritis as the most common subgroup, whereas more recent findings suggest polyarticular variety as the most prevalent subtype.

There is a paucity of clinical data from India on Ps A. In this study, we have analyzed the clinical characteristics and their association with HLA-B27 status in Ps A patients attending a tertiary care center in South India.

Materials and methods

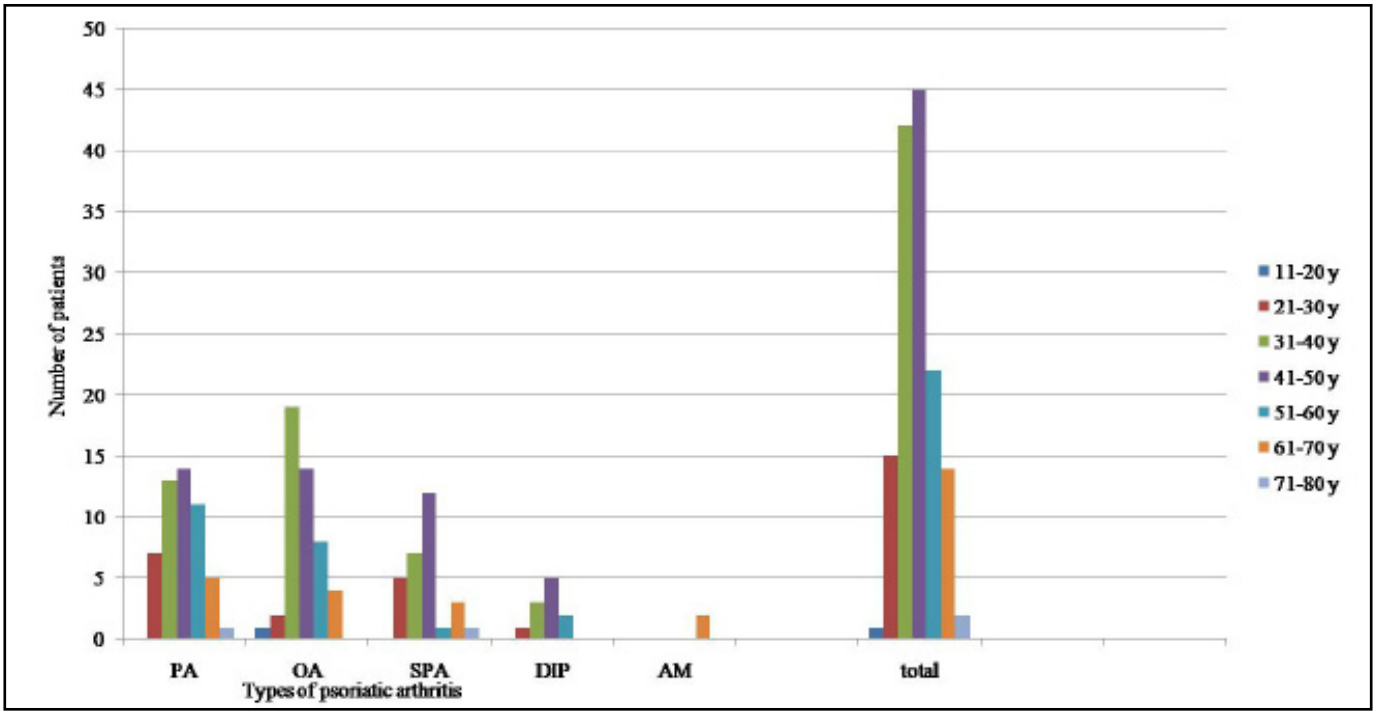
This retrospective study analyzed the demographic, clinical, and laboratory data of all patients with Ps A who had attended the clinical immunology department of a large tertiary care hospital between January 2009 and August 2012. We screened 157 patients who were previously diagnosed as Ps A based on treating physician's opinion, and only those meeting the CASPAR criteria were included in the study.[3] The data was collected through personal interviews, clinical examination, appropriate investigations, and analysis of case records. The patients were classified into different subtypes according to the CASPAR modification of Moll and Wright's criteria.[2] Appropriate X-rays were taken in all cases. Nephelometric measurement of rheumatoid factor and HLA-B27 typing by PCR were performed in all patients. The association of Ps A subgroups and different types of psoriatic skin lesions with HLA-B27 was analyzed by odds ratio (OR) and corresponding 95% confidence interval (CI). Statistical analysis was carried out using the Compare 2 software version 1.02.

Results

One hundred and forty-one patients fulfilling the CASPAR criteria were included in our analysis. Sixteen patients were excluded as they did not satisfy the CASPAR criteria. The corresponding number of male and female subjects considered was 89 and 52, with a male to female ratio of 1.7:1. Most of the study participants were in the fourth and fifth decades of life.

Polyarthritis (36.2%) was the most common subtype of Ps A seen in study subjects, followed by oligoarthritis (34%), spondyloarthropathy (20.6%), DIP predominant arthritis (7.8%), and arthritis mutilans (1.4%). DIP joint involvement was seen in 25 patients (17.4%). Among the 29 patients, who were classified into the spondyloarthritis group, six (20.7%) had isolated axial involvement. The two patients diagnosed with arthritis mutilans were above the age of 60 years. Although the number of patients with oligoarthritis was higher in the fourth decade (not statistically significant), the pattern of presentation was similar in all age groups except arthritis mutilans (Figure 1).

Figure 1: Age distribution and pattern of presentation of psoriatic arthritis



PA- Polyarticular, Oligoarticuar, SPA- Spondyloarthritis, DIP- Distal interphalangeal joint predominant arthritis, AM- Arthritis mutilans

Out of 141 patients, deformities of joints were seen in 46 subjects (32.6%). Dactylitis and enthesitis were noted in 24.1% and 11.3% of the patients respectively. Eye involvement in the form of episcleritis was seen only in one patient (Table 1). remaining six patients, four had oligoarthritis (25%) and two had polyarthritis (12.5%). In the spondyloarthropathy group, HLA-B27 was positive for 35.7% of the patients. Statistical analysis demonstrated that HLA-B27 positivity

Table 1: Demographic and clinical features of subjects

Total number of patients		**141**
M:F		**1.7:1**
Variables		**Number (Percentage)**
Subtypes of psoriatic arthritis [cumulative pattern]	Polyarthritis	51 (36.2%)
	Oligoarthritis	48 (34%)
	Spondyloarthropathy	29 (20.6%)
	DIP predominant	25 (17.7%)
	Arthritis mutilans	2 (1.4%)
Deformities		46 (32.6%)
Dactylitis		34 (24.1%)
Enthesitis		16 (11.34%)
Eye involvement		1 (0.7%)
Psoriasis types	Psoriasis vulgaris	119 (84.4%)
	Scalp psoriasis	7 (5%)
	Flexural psoriasis	5 (3.5%)
	Palmoplantar psoriasis	4 (2.8%)
	Erythroderma	2 (1.4%)
	Pustular psoriasis	1 (0.7%)
	Only nail involvement	3 (2.1%)
Overall nail involvement		25 (17.7%)
Arthritis preceding psoriasis		13 (9.2%)
Family history of psoriasis		16 (11.3%)
HLA-B27 positivity		16 (11.3%)

Psoriasis vulgaris was identified as the most common type of psoriatic skin lesion (84.4%). Isolated scalp psoriasis (5%) and flexural psoriasis (3.5%) were the other commonest groups. Typical psoriatic nail changes were observed in 17.7% of the subjects. Isolated nail involvement without skin involvement was seen in two patients (2.1%). All the patients with DIP predominant arthritis had nail involvement. Arthritis preceded skin involvement in 13 (9.2%) cases. Family history of psoriasis was present in 16 (11.3%) patients (Table 1).

The results of HLA-B27 typing were available for 139 patients. The study findings reported 16 patients (11.3%) as positive for HLA-B27. Among these, 10 patients (62.5%) belonged to the spondyloarthropathy group. Out of the was strongly associated with spondyloarthropathy group (OR=9.72; 95% CI=2.739 to 36.055; P=0.000). Fifteen out of sixteen HLA-B27-positive patients had psoriasis vulgaris (OR=2.74; 95% CI=0.374 to 121.351; P=0.544). The number of HLA-B27-positive patients noted in different psoriatic arthritis subtypes is listed in table 2.

Discussion

The demographic and clinical characteristics of Ps A could be influenced by different factors including genetic and environmental, and the diverse diagnostic criteria used in studies. In contrast to majority of the studies that showed an equal sex predisposition for psoriatic arthritis, the present study showed that the prevalence is more in a male-predominant population.[5, 6, 9, 11, 12] Certain studies

Table 2: Distribution of HLA-B27 among different psoriatic arthritis subtypes

Ps A subtypes	Number of HLA-B27-positive patients (n) (%)	Number of HLA-B27-negative patients (n) (%)	Odds ratio (OR)	Confidence interval (CI)	P value
Spondyloarthropathy	10 (35.7)	18 (64.3)	9.72	2.74-36.06	0.000
Oligoarthritis	4 (8.3)	44 (91.7)	0.60	0.13-2.14	0.567
Polyarthritis	2 (3.9)	49 (96.1)	0.22	0.02-1.01	0.063

from India (Rajendran *et al.* and Prasad *et al.*) have also reported a male predisposition.[7,13] Similar to the age pattern of patients in other studies, majority of our study participants were in the fourth and fifth decades of life.[3, 7, 13] The prevalence of arthritis mutilans was more in the older age group (seventh decade). A recent study by Rodriguez-Moreno *et al.* also reported analogous findings.[14] Similar to other studies, the occurrence of skin lesions preceded arthritis in majority of the cases. Arthritis preceded skin lesions in 9.2% of the study subjects. Evidence from previous studies also shows that arthritis can occur before skin lesions in 6 to 18%.[5, 6, 7, 8, 11, 12, 15]

We followed CASPAR modification of Moll and Wright proposal for subgrouping psoriatic arthritis.[2] This modification by CASPAR defines psoriatic arthritis subgroups more precisely when compared to the original classification by Moll and Wright.[1] The most prevalent clinical subtype observed during our study was polyarthritis and the subsequent order of prevalence of subtypes noted was; oligoarthritis, spondyloarthropathy, DIP predominant arthritis, and arthritis mutilans. These findings are largely in agreement with other studies; although there is a wide variation in the proportion of psoriatic spondyloarthropathy patients (Table 3). The difference in figures for psoriatic spondyloarthropathy may be due to the absence of well-defined classification criteria for the disease or difference in the genetic background of the study groups.

Similar to the study findings by Simon *et al.* and Siannis *et al.*, we have also reported the presence of deforming disease in 32.6% of the patients.[16, 17] In contrast, another study from India by Rajendran *et al.* showed a lesser prevalence of deformities.[7] Since, we have not examined the treatment effect and disease duration, it is difficult to comment about the factors associated with the deforming disease. However, the increased prevalence of deformities noted in our study confirms the fact that Ps A is not a benign disease. The prevalence of dactylitis and enthesitis reported were similar to the observations of Rajendran *et al.*, whereas other studies showed a higher prevalence.[3, 7, 8, 11, 18, 19] Akin to studies from Asia, eye involvement was very rare in present study.[7, 20]

In concurrence with the available literature, the current study also reports psoriasis vulgaris as the most common type of skin lesion observed (Table 4). Flexural and scalp psoriasis forms the second commonest disease, thereby

Table 3: Comparison of distribution of subtypes of psoriatic arthritis [cumulative pattern] with previous studies

Study	Country	Year	n	Polyarthritis (%)	Oligoarthritis (%)	Spondylitis (%)	DIP (%)	Mutilans (%)
Present study	**India**	**2013**	**141**	**36.2**	**34**	**20.6**	**7.8**	**1.4**
Roberts *et al.*[4]	UK	1976	168	79.8	16.8	4.9	NA	NA
Torre Alonso *et al.*[5]	Spain	1991	180	35.6	37.2	22.8	NA	4.4
Jones *et al.*[6]	UK	1994	100	63	26	6	1	4
Rajendran *et al.*[7]	India	2003	116	48.3	37.1	11.2	2.6	0.9
Michet *et al.*[8]	USA	2005	504	65	NA	18.6	NA	NA
Madland *et al.*[9]	Norway	2005	634	68.6	28.7	2.7	0	0.6
CASPAR *et al.*[3]	Multiple countries	2006	588	63	13	14	4	3
Reich *et al.*[10]	Germany	2009	312	58.7	31.6	NA	NA	4.9
Zisman *et al.*[11]	Israel	2012	149	49.7	34.2	17.5	19.5	3.3

Table 4: Comparison of demographic features and skin involvement in psoriatic arthritis with previous studies

Study	M:F	Arthritis preceding psoriasis (%)	Psoriasis type (%)	Only nail involvement (%)
Present study	**1.7:1**	**9.2**	**V84.4, G0, E1.4, P0.7, PP2.8, F3.5, S5**	**1.5**
Gladman *et al.*[12]	0.9:1	17	V94, G 4	2
Jones *et al.*[6]	0.8:1	18	V89, G4, P3	0
Rajendran *et al.*[7]	2.1:1	12.1	V81, G1, E9, P4	4.3
Prasad *et al.*[13]	5.6:1	0	V72.5, G5, E2.5, P15	0
Torre Alonso *et al.*[5]	1.2:1	14.9	V94, G1, E3, P2	2
Zisman *et al.*[11]	0.8:1	9.9	NA	NA
Madland *et al.*[9]	1.1:1	NA	V94, P6	NA
Michet *et al.*[8]	1.4:1	6	NA	NA
Noosent and Gran[15]	1.4:1	13.8	NA	NA

V- Vulgaris, G- Guttate, E- Erythrodermic, P- Pustular, PP- Palmoplantar, F-Flexural, S- Scalp alone

highlighting the importance of examining the hidden sites like scalp and flexures for psoriatic skin lesions.

The prevalence of HLA-B27 in our study population (11.3%) was slightly less when compared to the earlier reported prevalence ranging from 19 to 30%.[21, 22, 23, 24, 27] It is interesting to note that no other studies have been reported from India on the prevalence of HLA-B27 in psoriatic arthritis. Based on the available evidence, it could be concluded that HLA-B27 is strongly associated with spondyloarthropathy.[22, 24, 25, 26, 27] But, the prevalence of HLA-B27 in psoriatic spondyloarthritis was found to be much lesser than that in ankylosing spondylitis (prevalence of the antigen was more than 90%).[28] This could be due to the distinct genetic characteristics of psoriatic arthritis. In addition to HLA-B27, other HLA- genes play a significant role in Ps A susceptibility; whereas in ankylosing spondylitis, HLA-B27 is the major susceptibility gene.

Previous studies have showed an association between palmoplantar pustulosis and HLA-B27 positivity.[23, 29] However, in our study we could not find any significant association between psoriatic skin lesions and HLA-B27 positivity.

To the best of our knowledge, this is one of the largest Ps A study series from India and the first one from the country showing the prevalence of HLA-B27 in psoriatic arthritis. Most of the clinical characteristics of Ps A reported in our study comply with the studies from other parts of the world. However, extra-articular features were less prevalent in the present study.

Authors' contributions

Mithun CB, Paul T Antony, and Vir S Negi conceived and planned the study; Christina M Mariaselvam carried out immunological and molecular diagnostics; Mithun CB, Paul Antony, Christina M Mariaselvam, and Vir S Negi contributed equally to data analysis and manuscript preparation.

Competing interests

The authors declare that they have no competing interests.

Citation

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