Original Research Article

Evaluation of patients with psoriatic arthropathy attending tertiary care institute

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Abstract

Background: Psoriatic arthritis is a genetically determined disease affecting 5-8% of the psoriatic patients grouped under seronegative spondyloarthropathies. A temporal association between skin and joint changes has also been observed with synchronous remission and relapses of skin and joint. Aim: To evaluate patients with psoriatic arthropathy attending tertiary care institute. **Material and Methods:** This prospective observational study included 24 patients with psoriasis. Detailed history and a complete musculoskeletal and cutaneous examination were done for these selected patients. All patients in the study were subjected to radiological examination of joints. **Results:** Most common type of arthritis in our study population was RA like (33.33%) followed by oligo-articular type (29.16%). A significantly higher number of patients i.e. 21 out of 24 (87.5%) had nail changes. Out of these 20(95.2%) had Thimble pitting. The radiographs taken after 2 years or more demonstrated joint involvement with erosive and proliferative changes. **Conclusion:** The commonest type of psoriatic arthropathy, in this study was the RA like type. The commonest nail change documented was thimble pitting followed by ridging. Patients with longer duration of arthropathy showed more erosive and prolifertive changes. Overall soft tissue swelling was the commonest radiographic change observed. **Keywords:** psoriasis, psoriatic arthropathy, nail changes, radiological finding

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INTRODUCTION

Psoriatic arthritis is a genetically determined disease affecting 5-8% of the psoriatic patients grouped under seronegative spondyloarthropathies, a group that includes ankylosing spondylitis (AS), enteropathic arthritis, and Reiter's syndrome.¹The prevalence of arthritis among psoriatics is 5-7% and the percentage becomes higher as the severity increases reaching 30-40%.²⁻⁴ Psoriatic arthritis may be present with or without skin lesions or there may be only nail malformation or scalp lesions. In most instances, psoriasis precedes the arthritis though arthritis may appear before the psoriasis in some cases.⁵ Whether there is a correlation between the severity of

skin disease and arthritis in psoriasis is still under debate.²⁻⁴ There are many points in favour of a positive correlation between arthritis and the severity of psoriatic skin lesions. Psoriatic spondyloarthritis is known to be associated with severe psoriasis. A temporal association between skin and joint changes has also been observed with synchronous remission and relapses of skin and joint.⁷ The present study was conducted to evaluate patients with psoriatic arthropathy attending tertiary care institute.

MATERIAL AND METHODS

This prospective observational study included 24 patients with psoriasis attending the outpatient Department of Dermatology, indoor patients of Dermatology, Medicine, Orthopaedics and Paediatrics of a tertiary training hospital. An informed consent was taken to include patients in the study.All patients with some skin disease attending the Dermatology OPD were screened for musculoskeletal complaints i.e. joint pains of more than one month duration or chronic deformities.

Inclusion criteria

• Patients with psoriasis having definite joint involvement

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- Complain of joint pain / swelling / deformity for more than one month duration
- Patients willing to undergo relevant investigations wherever necessary

Exclusion criteria

- Patients with no evidence of arthritic changes
- Joint pathology attributable to other established causes like trauma.
- Patient with radiological evidence of overt osteoarthritis
- Who were not willing to undergo relevant investigations
- Denying consent

Detailed history and a complete musculoskeletal and cutaneous examination were done for these selected patients. All patients in the study were subjected to radiological examination of joints. Radiographs were done only for joints with evidence of arthritis, in the form of tenderness, swelling or loss of mobility. The radiographs were interpreted by the radiologist. The diagnosis of skin disease was made on clinical grounds. In cases of doubt, skin biopsy was done and only confirmed cases were included.

RESULTS

Onset of skin involvement was at an average of 33.27 years whereas that of joint was 38.18 years. Average age of patients examined was 41.16 years, of males 41.52 years and of females 40.28 years. The male to female ratio was 2:1. The average age of onset of skin involvement in males was 34.2 year and in females was 31 years. Average age of onset of joint involvement in males was 38.32 years and in females it was 37.85 years. The total number of DIP joints clinically involved was 31. Limitation of movement was present in 77.41 % among these i.e., in 24 joints. Radiological involvement was seen in 83.33% among these i.e. 20 joints. Clinically 20 PIP joints were involved, out of which 80% showed radiological changes. The most common among the large peripheral joints, involved were the ankle followed by knee in 25% and 20.8% of patients respectively. The MCP joints were involved in 33.33% of patients. The DIP and PIP joint involvement was seen in 45.83% and 33.33% respectively.

Table 1: Psoriatic Arthropathy with Age and Sex predilection							
Type of PSA	Males	Females	Total no. of patients	Total %	Avg. no of joints involved		
Oligo-articular	6	1	7	29.16	3.57		
DIP predominant	2	1	3	12.5	3		
RA like	3	5	8	33.33	9.62		
Arthritis mutilans	0	0	0	0	0		
Axial	5	1	6	25	3.5		
Total	16	8	24	100			

There was a male preponderance seen in the patients with psoriatic arthropathy but it was not statistically significant (chi square=2.04, df=1, P=0.153 NS). This was true of all the subtypes, except in the RA like subgroup where female predominance was seen. The male preponderance was most prominent in the oligoarticular group (6:1). Most common type of arthritis in our study population was RA like (33.33%) followed by oligo-articular type (29.16%).

Table 2: Average Age of Patients at Examination of PSA						
Type of arthropathy	Avg age at examination (yrs)	Males	Females			
Oligo-articular	40.57	39.66	46			
DIP predominant	38.33	37.5	40			
RA like	42.62	48.5	39.2			
Arthritis mutilans						
Axial	41.33	40.4	46			

The average age at presentation of DIP predominant arthritis was 38.3 years. This was 42.62 years for RA like type. The average age at presentation of other varieties fell between these years. The average age of onset of PSA for females was 37.5 years and in males it was 38.53 years. The difference was not significant (t=0.199, P=0.844). The average time by which skin preceded joint involvement was 6.375 years. Arthropathy occurred after skin lesions of psoriasis in 12.5% of patients at an average of 3.33 years. The occurrence of skin disease before Arthropathy was found to be significantly more i.e. in 21 out of 24 patients (83.3%). (Chi square=9.3, df=1, P=0.002 Sig) The number of DIP joints involved on the right side (11) was lesser than the left (20). However, the numbers of the PIP (14) and MCP (13) joints involved on the right side were more than the left (6 and 8). The total number of joints involved on the right side were almost same as left (42 joints as compared to 37). The maximum number of patients in each of the subtypes of arthritis, had only few skin lesions i.e. <30%. The average number of joints affected per patient varied between 4 and 10.75%. A significantly higher number of Psoriatic arthropathy patients had skin involvement less than 30% (Mann Whitney Z =20193, P=0.027 Sign).

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Table 5. Type of skill involvement with respect to sex predirection and subtype of althritis								
Type of skin disease	No of pts	M/F	Avg no of joints	Oligo-articular	DIP	RA like	Arthritis mutilans	Axial
Chronic plaque	21	17/4	5.71	7	2	6	0	6
Palmoplantar	1	0/1	4	0	0	1	0	0
Gen.Pustular	1	0/1	4	0	0	1	0	0
Erythroderma	1	0/1	4	0	1	0	0	0
Total	24	17/7		7	3	8	0	6

 Table 3: Type of skin involvement with respect to sex predilection and subtype of arthritis

Significantly higher number of patients i.e. 21 out of 24 (87.5%) had chronic plaque type of psoriasis (chi square=12.04, df=1, P<0.001 HS). The average number of joints affected in chronic plaque type of psoriasis was 5.71.Maximum number (9 of 24) of psoriatic arthropathy patients had skin disease of duration 2-5 years. The average number of joints involved in patients with disease duration less than 5 years was 3.93 whereas with disease duration \geq 5 years it was 7.7, however the difference was not statistically significant (Mann Whitney Z=1.60, P=0.110 NS).

Table 4: Nail changes with respect to duration of PSA							
Nail changes	<6 mths	6mth-1yr	1-2 yr	2-5 yr	5-10 yr	Total	
Normal	2				1	3	
Thimble pitting	5	2	5	4	4	20	
Discolouration	2		3	1	3	9	
Subungual hyperkeratosis	1		1		3	5	
Ridging	4	1	3	1	3	12	
Oil spot			2			2	
Onycholysis	1		3	1	2	7	
Splinter hemorrhage						0	
Nail plate thickening					1	1	

A significantly higher number of patients i.e 21 out of 24 (87.5%) had nail changes (chi square=12.04, df=1, P<0.001 HS). Out of these 20(95.2%) had Thimble pitting.

Table 5: Nail changes with respect to type of psoriatic arthropathy								
Nail changes	Oligoarticular	DIP	RA like	Axial	Total			
Normal	1	1	0	1	3			
Thimble pitting	6	2	8	4	20			
Discolouration	1	2	4	2	9			
Subungual hyperkeratosis	1	1	2	1	5			
Ridging	3	2	4	3	12			
Oil spot		0	2		2			
Onycholysis	2	0	3	2	7			
Nail plate thickening	1	0	0	0	1			

Pitting was the most frequent seen change seen in the RA like arthritis, followed by ridging. Normal nails were found in only 3 out of 24 patients i.e. 12.5%.

Table 6: Radiological findings with respect to duration of PSA							
Radiological finding	<6 mth	6 mth-1 yr	1-2 yr	2-5 yr	5-10 yr		
Normal	13	1	25	5	7		
Ankylosis	0	0	0	0	2		
Calcaneal spur	0	0	0	0	0		
Decreased joint space	0	0	5	0	6		
Diffuse osteoporosis	0	1	0	0	0		
Juxta articular osteoporosis	0	0	0	0	0		
Erosion tip term. phalynx	0	0	3	1	5		
Erosion base term. phalynx	0	0	0	0	3		
Erosion tip middle phalynx	0	0	0	0	0		
Erosion base middle phalynx	0	0	2	0	3		
Erosion tip prox. phalynx	0	0	2	0	1		
New bone formation	1	1	1	1	8		
Periosteal reaction	0	1	1	4	3		
Soft tissue swelling	32	0	2	0	2		
Irregularity of vertebra	1	1	1	1	1		
Sacroilitis	0	0	2	0	0		

Most of the radiographs taken within six months of joint involvement revealed either no radiological abnormality or only soft tissue tissue swelling. The radiographs taken after 2 years or more demonstrated joint involvement with erosive and proliferative changes. Among the DIP predominant and RA like type of PSA, soft tissue swelling was the most commonly reported change. Among the spondyloarthropathies, several changes were found like sacroilitis, irregularity of vertebra etc. A few among these had peripheral joint involvement showing erosion, periosteal reaction and soft tissue swelling.

Table 7: Radiological findings with respect to type of PSA								
Dadiological finding	Oligoarticular (p. 7)	DIP like	RA like	Axial				
Radiological finding		(n=3)	(n=8)	(n=6)				
Normal	9	3	44	1				
Ankylosis	0	0	2	0				
Calcaneal spur	0	0	0	0				
Decreased joint space	9	0	2	1				
Diffuse osteoporosis	1	0	0	0				
Juxta articular osteoporosis	0	0	0	0				
Erosion tip term. phalynx	3	0	3	2				
Erosion base term. phalynx	0	0	4	1				
Erosion tip middle phalynx	0	0	0	0				
Erosion base middle phalynx	5	0	0	0				
Erosion tip prox. phalynx	2	0	1	0				
New bone formation	8	0	1	2				
Periosteal reaction	1	0	0	5				
Soft tissue swelling	4	7	25	4				
Irregularity vertebra	0	0	0	4				
Sacroilitis	0	0	0	2				

DISCUSSION

The average age of onset of arthropathy in this study was 38.18 years. This is in accordance with world literature, where the onset of psoriatic arthropathy is between third and fifth decades.^{3,4} However, Prasad *et al*⁶ in his study encountered maximum number of patients (16 out of 40,i.e.40%) in 6th decade. The male to female ratio in PSA has been reported to be equal in some studies^{3,4} others mention а whereas slight female preponderance.^{2,7,8} Indian studies have documented a significant male preponderance in PSA,^{8,9} which is in concordance with our study in which the males outnumber the females in a ratio of 2:1 which was not statistically significant. The number of males exceeded the females in each of the subgroups except in RA like arthritis where 3 of the patients were male, the other 5 were female out of which 6 (75%) had chronic plaque psoriasis. The commonest type of psoriatic arthropathy, in this study was the RA like type, which accounted for 33.33% of the cases (n=8). Most of the Indian study results are consistent with our study.^{9,10} Chaudhary et al⁹ from Chandigarh, reported most common type psoriatic arthropathy to be RA like type (33.3%). A recent study from South India by Rajendran et al,11 who had demonstrated commonest type of arthropathy as RA like type (48.3%). However, Prasad et al6 reported most common type to be oligoarthritic type (42.5%). This may mean that the RA like type of PSA appears to be the most predominant type in Indian subcontinent as against West

where oligoarticular type of arthritis appears most common as reported by Moll et al.⁷ The second commonest type of psoriatic arthritis in the current study was oligoarthritic type (7 out of 24 patients i.e.29%). This is the commonest subtype reported amongst the studies from West as described by Moll and Wright.⁷ In our study 8.33% of patients had sacroilitis. Some studies have reported radiological evidence of sacroilitis in up to 78% of patients.⁵ The most characteristic type of PSA i.e. DIP predominant type was found in 12.5% of patients with the male to female ratio being 2:1. The percentage of DIP predominant type is 5% as per Moll and Wright⁷ with other studies¹² quoting values between 5 and 6%. Studies from India show a percentage varying between 6.1 and 16%.9,10DIP joint involvement was seen in 41.66% of patients. This is in comparison with other studies from both India¹¹ and abroad^{2,7} where DIP involvement ranged between 26-32.6%. A single study done by Chaudhary et al9 from India shows a much percentage of DIP joint arthritis i.e. 66.6%. Studies from India a done by Chaudhary *et al*⁹ and Rajendran *et al*¹¹ report that around 56-63% of patients have PIP joint arthropathy whereas in world literature^{2,7} this type of joint involvement is less commonly involved (41-49%). In the present series 37.5% of patients had PIP joint arthritis. Among the large peripheral joints the most frequently involved joint was ankle (25%). This number is much lower than what is quoted in other studies from India9,11 and abroad (23-50% in ankle). Axial involvement was observed in 25% with

sacral involvement in 8.33% in our study group. This has been discussed in types of PSA.A statistically significant number of patients (21 out of 24, 87.5%) had Nail changes. Studies from India report frequency of patients with nail changes between $30.2\%^{31}$ and $76\%^{20}$. As per literature nail changes can be seen in 80%^{2,7} and can be as high as 90%¹¹ of patients with psoriatic arthritis. Among all types of PSA, the most frequently observed nail change was thimble pitting (95.2%), followed by ridging in 57.14%. Choudhary et al,9 also found pitting to be the commonest nail change in PSA as thimble pitting in 66.6% followed by ridging in 53.4% of patients. Discolouration (42.85%) and onycholysis (33.33%) were also reported in our study group. The study done by Choudhary et al9 found a higher percentage of onycholysis (50%). They have not reported subungual hyperkeratosis but their study found an increased percentage of nail plate thickening (50%), whereas in our study nail plate thickening was found only in 4.16%. Oil spot, which is an uncommon finding, was present in 8.33% of the present study group as compared to 3.3% in the study by Choudhary et al.9 The other clinical studies from India have not mentioned the percentages of various types of nail involvement in PSA.9,11 Patients with arthropathy of 1-2 yrs duration showed the maximum number of nail changes. Among these pitting was the most common (100%), followed by ridging (60%), discoloration of nail plate (60%), onycholysis (60%) and oil spot (40%). Patient with duration of joint involvement between 2 and 10 years also showed an increase in the number of nail changes but those in whom the duration of arthropathy was greater than 10 years hardly showed any nail involvement. Most of these patients had chronic plaque type of psoriasis. Many patients (25%) in the group with arthropathy of less than 6 months duration did not demonstrate any radiological change, even in symptomatic joint, i.e. they showed normal radiographs. The majority of the patients (50%) with duration of arthropathy less than 6 months had only soft tissue swelling without erosive or proliferative changes. This is to be expected as erosive changes occur only after the joint suffers the insult for certain duration of time.^{13,14} After the erosive changes have set in reparative changes start; occasionally erosive and reparative changes occur simultaneously.^{13,14}The reverse picture also holds true, it was observed that as duration of arthropathy increased, the number of cases with soft tissue swelling decreased with increase in the erosive and proliferative changes. The number of joints with ankylosis was highest in those with arthropathy for periods longer than 10 years. Erosion at the tip and base of terminal phalanx and new bone formation was the most common finding in this group. Periosteal reaction and erosion at the tip/base of the

middle phalanx were present in the other group with joint involvement between 6 months and 10 years. As there is no data correlating the duration of arthropathy with radiological changes, these parameters could not be compared. In symmetric polyarticular (RA like) subset of PSA, 56.41% of clinically involved joints showed normal radiology. In those with radiological changes soft tissue swelling was the commonest abnormality found. The majority of patients with this subtype of arthropathy had duration of involvement less than 6 months. This reflects the fact that this type of arthritis occurs in an acute or sub acute setting where erosive and proliferative changes have not had time to set in.^{13,14} In the DIP predominant type of PSA, the commonest finding was soft tissue swelling. Rest of the patients showed no radiological abnormality. Most of the oligoarticular type patients had either normal radiological features or decreased joint space. New bone formation and erosion of the base of middle phalanx were amongst the prominent changes in those patients with radiological involvement. There is no data correlating the radiological characteristics with various types of arthropathy except for spondyloarthropathy. Therefore, it was not possible to compare the above mentioned radiological changes with previous data. Majority of patients in the study did not complain of symptoms of axial involvement. Only 6 out of 24 patients had complaints suggestive of axial involvement. They were radiologically investigated. All of them had radiological evidence of arthritis. This high percentage could be because radiographs of the spine were taken in symptomatic patients alone. It is also known that many patients who are asymptomatic could have radiological changes of PSA,¹⁵ but this could not be assessed in our study, as X-rays were taken only if the patients complained of joint pains. Four patients with also peripheral spondyloarthropathy had joint involvement (small joints of hand). This is in agreement with the fact that patients with spondyloarthropathy can also have peripheral joint involvement.^{7,15}Non-marginal or paravetebral syndesmophytes which are known to be specific to PSA, were seen in 5.6 % of psoriatic arthropathy patients in the study done by Rajendran et al.¹¹ However, no paravetebral syndesmophytes were seen in our study. This could be because we could have missed out radiological changes in the axial skeleton as spine X rays were taken only for symptomatic patients (6 out of 24). Studies from India have reported presence of syndesmophytes of the marginal variety in psoriatic spondyloarthropathy patients.^{16,17} In our study none of the patient had vertebral syndesmophyte. Vertebral squaring which has been reported in various studies is usually seen in ankylosing spondylosis, not in PSA.13 The various Indian studies that have reported a vertebral squaring are

by Mittal et al^{16} and Rajendran et al^{11} who reported an incidence of 7.2 and 0.86% respectively. In the present study there was no vertebral squaring seen similar to a study by Kalam et al.8 There was only one patient with cervical involvement in our study which is consistent with the fact that cervical spine is less commonly involved in PSA.¹³ In a large retrospective study done in South India, no case of cervical involvement was found.¹¹ One isolated report indicates that cervical involvement is common in PSA.¹⁵ The study on cervical involvement in psoriasis done by Bannerjee $et al^{16}$ showed that changes like anterior proliferation, apophyseal narrowing, sclerosis, calcification of anterior ligament, marginal erosion can be appreciated in PSA.¹⁶ Another study on the radiological changes in PSA from Patiala, Punjab shows cervical spine involvement in 7.3% of patients.¹⁶ Two among the six spondyloarthropathy patients (33.33%) had radiologically evident sacroilitis. Sacroilitis is reported to occur in 20-40% of patients with psoriatic spondyloarthropathy.¹⁵ However Ruderman reports that up to 70% of patients with psoriatic spondyloarthropathy may show radiological evidence of sacroilitis.⁵ In the study done by Mittal, Gupta and Kaur on 41 patients of PSA, where radiological examination of spine was done in all patients, sacroiliac joint involvement was present in 27% of patients.¹⁷ 13 among 116 patients (11.2%) were found to have radiologically evident sacroilitis in the study done in South India.¹¹ No patient presented with calcaneal spur. These ill-defined spurs are known to occur because of erosive/proliferative bone changes occurring at sites of attachments of plantar aponeurosis or Achilles' tendon to the calcaneum. (enthesitis).¹³ Calcaneal spur was seen in 1 patient (0.5%) in the study done by Kalam et al.⁸ A few studies done in India⁹⁻¹¹ did not detect any calcaneal spurs on radiology, which shows that this is an uncommon finding in PSA. One of these found tendoachilles calcification in 3.5% of joints observed radiologically.¹¹ In our study we did not detect calcification of tendoachilles. The limitation in the radiological evaluation of the present study was that radiographs were taken only for symptomatic joints because of which some radiological features in asymptomatic or clinically uninvolved joints could have missed. been This is especially true of spondyloarthropathy as it is documented that this is often asymptomatic, but can still demonstrate radiological changes. Radiographs of all joints irrespective of symptoms were not done, to avoid financial burden to the patient.

CONCLUSION

The commonest type of psoriatic arthropathy, in this study was the RA like type. Maximum number of PSA patients had skin involvement <30% mostly with chronic plaque type. The commonest nail change documented was thimble pitting followed by ridging. Patients with longer duration of arthropathy showed more erosive and prolifertive changes. Overall soft tissue swelling was the commonest radiographic change observed.

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