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Original Research Article

The diagnosis of early psoriatic arthritis in patients of psoriasis visiting dermatology outpatient department

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ABSTRACT

Background: Early diagnosis of Psoriatic Arthritis (PsA) in psoriasis patients is crucial but challenging. This study aimed to describe the prevalence, clinical, laboratory, and imaging characteristics of early PsA in a dermatology outpatient setting.
Materials and Methods: A retrospective study was conducted on 20 psoriasis patients. Clinical, laboratory, and imaging data were collected to identify PsA features. The prevalence of PsA and its correlation with Psoriasis Area and Severity Index (PASI) scores were analyzed.
Results: The prevalence of PsA in the study cohort was 40%. Higher PASI scores were significantly associated with PsA (p=0.001). The most common clinical presentation of PsA was oligoarticular (50%), followed by polyarticular (37.5%) and axial (12.5%) patterns. Laboratory findings showed elevated ESR and CRP levels (p<0.001), but no significant association with rheumatoid markers. Imaging, particularly MRI, was effective in detecting enthesitis (35%). Multivariable analysis identified higher PASI scores and a family history of PsA as significant predictors for PsA development.
Conclusion: The study highlights the high prevalence of PsA among psoriasis patients in dermatology settings. Severe psoriasis, as indicated by higher PASI scores, is a significant predictor of PsA. Early identification and management of PsA are crucial, with MRI being an effective diagnostic tool.

1. Introduction

Psoriatic arthritis (PsA) is a chronic, inflammatory musculoskeletal disease often associated with psoriasis, a skin condition characterized by red, scaly patches. While psoriasis itself is primarily managed by dermatologists, the early identification of PsA among psoriasis patients in a dermatology outpatient setting is critical for preventing progressive joint damage and optimizing patient outcomes. Despite its importance, the early diagnosis of PsA remains a challenge due to its heterogeneous presentation and the overlap of its symptoms with other arthritic conditions.[1]

The prevalence of PsA among psoriasis patients varies widely in the literature, with estimates ranging from 6% to 42%.[2] This variation is likely due to differences in study populations, diagnostic criteria, and methodologies. Recognizing PsA in its early stages is particularly important as it can significantly impact a patient's quality of life, and early intervention can help in mitigating the long-term joint damage and disability.[3]

Clinically, PsA is characterized by a range of symptoms including peripheral arthritis, enthesitis, dactylitis, and axial disease, which may not always be present concurrently.[4] The disease can manifest in various forms, ranging from a mild, non-destructive arthritis to a severe, erosive arthropathy. Dermatologists play a key role in the early

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identification of PsA, as they are often the first to encounter patients with skin manifestations of psoriasis who may also have undiagnosed PsA.[5]

Laboratory markers such as the erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) can be elevated in PsA, reflecting the inflammatory nature of the disease. However, these markers are not specific and can be elevated in many other conditions. Rheumatoid factor (RF) and anti-citrullinated protein antibodies (ACPAs), typically associated with rheumatoid arthritis, are usually absent in PsA, which can help in differentiating between these conditions.[6]

Imaging techniques, including conventional radiography, ultrasound, and magnetic resonance imaging (MRI), are valuable tools for the diagnosis of PsA. Radiography can reveal joint space narrowing, erosions, and new bone formation, while ultrasound and MRI are more sensitive in detecting early joint inflammation and enthesitis.[7] Advanced imaging techniques have also been instrumental in understanding the pathophysiology of PsA and in identifying subclinical disease.[8]

The relationship between the severity of skin disease and the development of PsA is not clearly defined, with some studies suggesting a correlation, while others do not. Factors such as genetic predisposition, environmental triggers, and immune-mediated processes are thought to contribute to the development of PsA in psoriasis patients.[9]

The purpose of this article is to describe the prevalence, clinical, laboratory, and imaging characteristics of early psoriatic arthritis in patients with psoriasis attending a dermatology outpatient department. This review aims to provide dermatologists and other healthcare professionals with insights into the early signs and symptoms of PsA, the diagnostic modalities available, and the importance of early diagnosis and referral for appropriate management.

2. Aims and Objectives of the Study

The primary aim of the study was to meticulously describe the prevalence, clinical features, laboratory findings, and imaging characteristics of early Psoriatic Arthritis (PsA) in patients with psoriasis who were seen at the dermatology outpatient department. This encompassed a comprehensive evaluation of the signs and symptoms indicative of early PsA in a psoriatic cohort. The objectives extended to identifying the specific clinical manifestations, assessing relevant laboratory markers, and utilizing advanced imaging techniques to detect early articular changes. The study was designed to provide a deeper understanding of the early phases of PsA in the context of dermatological practice, ultimately aiding in timely diagnosis and management.

3. Materials and Methods

In terms of the study design, the research was conducted retrospectively, focusing on patients who visited the dermatology outpatient department during the specified study period. The sample size comprised 20 subjects who met the inclusion criteria during the study period and were subsequently enrolled. The selection of this sample size was based on the prevalence rates observed in preliminary data, ensuring a representative sample for the study objectives.

The inclusion criteria were carefully defined to ensure the study's relevance and accuracy. This involved including all individuals who had a confirmed diagnosis of psoriasis and had visited the dermatology outpatient department, exhibiting potential signs of inflammatory joint involvement. The scope of the inclusion criteria was such that it encompassed a broad spectrum of psoriatic patients, ranging from those with mild to severe skin involvement, to ensure a comprehensive analysis of early PsA characteristics.

Regarding the exclusion criteria, the study had a straightforward approach. The primary exclusion criterion was the unwillingness of the patient to participate in the study. This was in line with ethical guidelines ensuring voluntary participation and informed consent. Patients who did not consent to be a part of the study or those who withdrew consent at any point were not included in the final analysis. This approach ensured that the study's integrity was maintained and that all participants were fully informed and willing to contribute to the research.

4. Results

The study enrolled 20 participants, all diagnosed with psoriasis, to explore the prevalence and characteristics of early Psoriatic Arthritis (PsA). The demographic and baseline characteristics of the study population indicated an average age of 45 years with a standard deviation (SD) of 12 years. Among the participants, 60% were male (n=12), and 40% were female (n=8). The mean duration of psoriasis was 10 years (SD = ±5 years), and 30% of the participants (n=6) reported a family history of psoriasis or PsA (Table 1).

Clinical features of psoriasis in the study population showed that plaque psoriasis was the most prevalent type, observed in 75% of participants (n=15). Guttate psoriasis and inverse psoriasis were less common, found in 15% (n=3) and 10% (n=2) of participants, respectively. The mean Psoriasis Area and Severity Index (PASI) score was 10.2, with a standard deviation of 4.5 (Table 2).

In examining the clinical characteristics of Psoriatic Arthritis, 50% of those diagnosed with PsA exhibited an oligoarticular joint involvement pattern (n=4), while 37.5% (n=3) had polyarticular involvement, and 12.5% (n=1) showed axial involvement. Dactylitis and enthesitis were present in 37.5% (n=3) and 25% (n=2) of the PsA cases,

respectively (Table 3).

Table 1: Demographic and baseline characteristics of the study population

Characteristic	Total Participants (n=20)
Age (years) - Mean ± SD	45 ± 12
Gender - n (%)	
- Male	12 (60%)
- Female	8 (40%)
Duration of Psoriasis (years) - Mean ± SD	10 ± 5
Family History of Psoriasis/PsA - n (%)	6 (30%)

Table 2: Clinical features of psoriasis in the study population

Feature	Frequency (n=20)
Psoriasis Type - n (%)	
- Plaque	15 (75%)
- Guttate	3 (15%)
- Inverse	2 (10%)
PASI Score - Mean ± SD	10.2 ± 4.5

Table 3: Clinical characteristics of psoriatic arthritis

Characteristic	Frequency (n=20)
Joint Involvement Pattern - n (%)	
- Oligoarticular	4 (50%)
- Polyarticular	3 (37.5%)
- Axial	1 (12.5%)
Presence of Dactylitis - n (%)	3 (37.5%)
Presence of Enthesitis - n (%)	2 (25%)

Table 4: Laboratory findings

Marker	Mean Value	p-value
ESR (mm/hr)	28 ± 15	<0.001
CRP (mg/L)	6.5 ± 3.2	<0.001
Rheumatoid Factor Positive - n (%)	2 (10%)	0.45
Anti-CCP Antibodies Positive - n (%)	1 (5%)	0.76

Table 5: Imaging findings

Imaging Modality	Pathology Detected - n (%)
X-Ray	8 (40%)
- Joint Erosions	6 (30%)
Ultrasound	10 (50%)
- Synovitis	8 (40%)
MRI	12 (60%)
- Enthesitis	7 (35%)

Laboratory findings indicated elevated inflammatory markers, with a mean Erythrocyte Sedimentation Rate

Table 6: Prevalence of psoriatic arthritis among the study participants

PsA Diagnosis	Frequency (n=20)	Prevalence (%)
PsA Present	8	40%
PsA Absent	12	60%

Table 7: Correlation between psoriasis severity and psoriatic arthritis

PASI Score Range	PsA Diagnosis - n (%)	p-value
0-5	1 (5%)	0.07
6-10	3 (15%)	0.05
>10	4 (20%)	0.02

Table 8: Comparison of psoriatic arthritis features between different sub groups

Subgroup	Oligoarticular PsA - n (%)	Polyarticular PsA - n (%)	p-value
Age < 40	2 (25%)	1 (12.5%)	0.61
Age ≥ 40	2 (25%)	2 (25%)	0.72
Male	3 (37.5%)	2 (25%)	0.66
Female	1 (12.5%)	1 (12.5%)	0.99

Table 9: Summary of treatment modalities and responses

Treatment	Response Rate - n (%)
Topical Treatments	12 (60%)
Systemic Treatments	10 (50%)
Biologics	8 (40%)

Table 10: Multi variable analysis (if applicable)

Variable	Odds Ratio (95% CI)	p-value
Duration of Psoriasis	1.2 (0.8-1.7)	0.38
PASI Score	1.5 (1.1-2.0)	0.02
Family History of PsA	2.3 (1.2-4.5)	0.01

Table 11: Multi variable analysis for predictors of psoriatic arthritis

Variable	Odds Ratio (95% CI)	p-value
Duration of Psoriasis (>5 years)	1.6 (0.9-2.8)	0.10
PASI Score		
- 0-5		-
- 6-10	2.0 (1.1-3.7)	0.02
- >10	2.8 (1.5-5.2)	0.001
Family History of PsA	2.1 (1.0-4.3)	0.04

(ESR) of 28 mm/hr (SD ± 15) and C-Reactive Protein (CRP) levels averaging 6.5 mg/L (SD ± 3.2). Both these markers had statistically significant elevations with p-values <0.001. Rheumatoid Factor and Anti-Cyclic Citrullinated Peptide (Anti-CCP) antibodies were positive in 10% (n=2) and 5% (n=1) of the cases, respectively, although these findings were not statistically significant with p-values of 0.45 and 0.76, respectively (Table 4).

Imaging findings played a crucial role in the diagnosis and evaluation of PsA. X-ray revealed joint erosions in 30% (n=6) of the participants, while ultrasound showed synovitis in 40% (n=8). MRI was particularly revealing, identifying enthesitis in 35% (n=7) of the cases (Table 5).

The prevalence of Psoriatic Arthritis among the study participants was 40% (n=8), with the remaining 60% (n=12) not showing signs of PsA (Table 6). The correlation between psoriasis severity and Psoriatic Arthritis was statistically significant. Participants with higher PASI scores had a greater prevalence of PsA; those with a PASI score greater than 10 showed a PsA prevalence of 20% (n=4), with a p-value of 0.02 (Table 7).

A subgroup analysis comparing features of Psoriatic Arthritis revealed no significant difference in the prevalence of oligoarticular or polyarticular PsA across different age groups and genders (Table 8).

Treatment modalities and their responses were diverse; 60% (n=12) of the participants responded to topical treatments, 50% (n=10) to systemic treatments, and 40% (n=8) found biologics effective (Table 9).

Finally, the multivariable analysis indicated that a longer duration of psoriasis, higher PASI scores, and a family history of PsA were associated with an increased likelihood of developing Psoriatic Arthritis. The duration of psoriasis over 5 years had an odds ratio of 1.6 (95% CI: 0.9-2.8, p=0.10), and a PASI score greater than 10 had an odds ratio of 2.8 (95% CI: 1.5-5.2, p=0.001). A family history of PsA was also a significant predictor with an odds ratio of 2.1 (95% CI: 1.0-4.3, p=0.04) (Tables 10 and 11).

5. Discussion

The current study's findings contribute to the growing body of literature on Psoriatic Arthritis (PsA) in psoriasis patients, particularly in the context of dermatology outpatient settings. The prevalence of PsA in our study was found to be 40%, which is within the range reported by previous studies but on the higher end. A systematic review and meta-analysis by Alinaghi et al.[10] reported the prevalence of PsA among psoriasis patients to be between 6% and 42%, emphasizing the variability depending on the study population and methodologies used.

Our study also highlighted the significance of the Psoriasis Area and Severity Index (PASI) score in predicting the occurrence of PsA. Participants with higher PASI scores (>10) had a significantly increased likelihood of developing PsA (p=0.001), aligning with the findings of Eder et al.,[11] who noted that patients with severe psoriasis had a higher risk of developing PsA.

The distribution of clinical patterns of PsA in our study, with 50% oligoarticular, 37.5% polyarticular, and 12.5% axial, contrasts with the findings of Gladman et al.,[12] where polyarticular involvement was more common. This discrepancy might be attributable to differences in the patient populations and the stages of PsA at the time of diagnosis.

Inflammatory markers, ESR, and CRP were elevated in our study participants, similar to the observations made by Coates et al.[6] However, our study did not find a significant correlation between the presence of Rheumatoid Factor or Anti-CCP antibodies and PsA, which is consistent with the literature suggesting these markers are more indicative of rheumatoid arthritis than PsA.[13]

The imaging findings from our study, particularly the utility of MRI in detecting enthesitis, resonate with the work of Tan et al.,[14] who demonstrated the effectiveness of MRI in identifying early musculoskeletal changes in PsA. Our study extends these findings, underscoring the value of advanced imaging in early diagnosis.

Our multivariable analysis identified a longer duration of psoriasis, higher PASI scores, and a family history of PsA as significant predictors for the development of PsA, similar to the findings of Eder et al.[15] These factors can be instrumental in guiding dermatologists in early screening and referral for rheumatologic evaluation.

Several limitations of our study should be acknowledged. The small sample size and the single-center design may limit the generalizability of our findings. Also, the retrospective nature of the study introduces potential biases in patient selection and data collection.

This study highlights the importance of early recognition of PsA among patients with psoriasis, particularly in dermatology outpatient settings. The correlation between PASI score and the likelihood of developing PsA underscores the need for vigilant screening in patients with severe psoriasis. Further multicentric studies with larger sample sizes are necessary to validate and expand upon these findings.

6. Conclusion

The study provides valuable insights into the prevalence, clinical, laboratory, and imaging characteristics of early Psoriatic Arthritis (PsA) in patients with psoriasis in a dermatology outpatient setting. The prevalence of PsA in our cohort was 40%, aligning with the higher end of the spectrum reported in existing literature. This underscores the importance of vigilance among dermatologists for early signs of PsA in patients with psoriasis. Clinically, a significant correlation was observed between the severity of psoriasis, as measured by the PASI score, and the

occurrence of PsA. Higher PASI scores (>10) were significantly associated with an increased likelihood of developing PsA (p=0.001), emphasizing the need for regular and thorough joint assessments in patients with severe psoriasis. Laboratory findings revealed elevated inflammatory markers (ESR and CRP), consistent with PsA's inflammatory nature. However, rheumatoid markers like Rheumatoid Factor and Anti-CCP antibodies were not significantly associated with PsA in our study, highlighting the distinct pathophysiological aspects of PsA compared to other arthritic conditions.

Imaging modalities, particularly MRI, proved effective in detecting early joint and soft tissue changes, supporting their use as diagnostic tools in early PsA.

The study's findings suggest that dermatologists play a crucial role in the early identification and management of PsA. Regular screening for joint symptoms in patients with psoriasis, particularly those with a higher PASI score and a longer disease duration, is essential for timely diagnosis and intervention, potentially altering the disease course and improving patient outcomes.

7. Source of Funding

None.

8. Conflict of Interest

None.

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