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EXTRA-ARTICULAR MANIFESTATIONS IN RHEUMATOID ARTHRITIS: PREVALENCE, CLINICAL PROFILE AND SEROLOGICAL ASSOCIATIONS IN A TERTIARY CARE HOSPITAL-BASED OBSERVATIONAL STUDY

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ABSTRACT **Background:** Rheumatoid arthritis (RA) is a chronic systemic autoimmune inflammatory disease characterized by persistent synovitis, progressive joint destruction, and diverse extra-articular manifestations (EAMs). These manifestations contribute substantially to morbidity, disability, impaired quality of life, and mortality. **Objectives:** To evaluate the clinical profile of patients with rheumatoid arthritis, determine the prevalence and pattern of extra-articular manifestations, and assess their association with rheumatoid factor (RF) and anti-cyclic citrullinated peptide (anti-CCP) antibody positivity. **Materials and Methods:** This observational hospital-based study was conducted in the Department of General Medicine, ACPM Medical College and Hospital, Dhule, Maharashtra, from June 2024 to January 2026. Fifty-two consecutive patients fulfilling the 2010 American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) classification criteria for rheumatoid arthritis were enrolled. Detailed clinical evaluation, laboratory investigations, radiological assessment, and screening for extra-articular manifestations were performed. Data were analyzed using SPSS version 20. Statistical significance was considered at $p < 0.05$. **Results:** The mean age of the study population was 43.48 ± 11.26 years, with most patients belonging to the 40–49 years age group (55.76%). Females constituted 88.5% of cases with a female-to-male ratio of 7.66:1. Extra-articular manifestations were observed in 33 patients (63.5%). Anemia was the commonest manifestation (57.7%), followed by pulmonary involvement (13.5%), ophthalmological manifestations (9.6%), dermatological manifestations (7.7%), and cardiac involvement (1.9%). Rheumatoid factor and anti-CCP positivity were observed in 84.6% and 90.4% of patients respectively. Extra-articular manifestations were significantly more common among seropositive patients. **Conclusion:** Rheumatoid arthritis predominantly affects middle-aged women and is frequently associated with systemic manifestations. Early recognition and periodic screening for extra-articular involvement are essential to reduce morbidity and improve long-term outcomes.

KEYWORDS : Rheumatoid Arthritis, Extra-Articular Manifestations, Rheumatoid Factor, Anti-CCP Antibodies, Seropositivity, Anemia.

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory autoimmune disorder characterized by persistent synovitis, progressive joint destruction, and systemic involvement. It affects approximately 0.5–1% of the adult population worldwide and represents one of the most common inflammatory arthritis.

Beyond articular disease, rheumatoid arthritis may involve multiple organ systems, resulting in extra-articular manifestations such as anemia, pulmonary disease, cardiovascular involvement, ocular disorders, vasculitis, dermatological lesions, and neurological complications. These manifestations are generally associated with severe disease activity, prolonged disease duration, seropositivity, increased disability, and poor prognosis.

Although advances in disease-modifying antirheumatic drugs (DMARDs) have improved outcomes, extra-articular manifestations remain an important cause of morbidity and mortality. Early recognition of systemic involvement is therefore essential.

The present study was undertaken to evaluate the prevalence, pattern, and clinical spectrum of extra-articular manifestations among patients with rheumatoid arthritis attending a tertiary care teaching hospital.

MATERIALS AND METHODS

Study Design

Observational hospital-based study.

Study Duration

June 2024 to January 2026.

Study Setting

Department of General Medicine, ACPM Medical College and Hospital, Dhule, Maharashtra.

Study Population

A total of 52 consecutive patients diagnosed with rheumatoid arthritis were enrolled during the study period.

Inclusion Criteria

- Patients fulfilling 2010 ACR/EULAR classification criteria for rheumatoid arthritis.
- Age more than 18 years.
- Patients willing to participate in the study.

Exclusion Criteria

- Overlap connective tissue disorders.
- Incomplete clinical records.
- Patients unwilling to provide consent.

Methodology

All patients underwent detailed history taking and clinical examination. Laboratory investigations included complete blood count, ESR, CRP, rheumatoid factor, anti-CCP antibodies, liver function tests, renal function tests, and radiological assessment. Screening for extra-articular manifestations involving hematological, pulmonary, cardiovascular, dermatological, and ocular systems was performed.

Pulmonary manifestations included interstitial lung disease, pleural involvement, and pulmonary fibrosis. Ophthalmological manifestations included keratoconjunctivitis sicca, episcleritis, and scleritis. Cardiac evaluation included clinical examination and electrocardiographic assessment.

Statistical Analysis

Data were analyzed using SPSS version 20. Continuous variables were expressed as mean ± standard deviation. Categorical variables were expressed as frequency and percentage. Chi-square test was used for comparison of categorical variables. A p-value less than 0.05 was considered statistically significant.

RESULTS

A total of 52 patients were included in the study. The mean age was 43.48 ± 11.26 years and the mean disease duration was 7.84 ± 3.62 years. Females predominated with a female-to-male ratio of 7.66:1.

Table 1. Demographic Characteristics

Parameter	Value
Total patients	52
Mean age	43.48 ± 11.26 years
Female patients	46 (88.5%)
Male patients	6 (11.5%)
Female:Male ratio	7.66:1
Mean disease duration	7.84 ± 3.62 years

The most commonly affected joints were proximal interphalangeal joints (96.2%), wrist joints (84.6%), and metacarpophalangeal joints (80.8%). Morning stiffness was observed in 69.2% of patients, fatigue in 57.7%, and generalized joint pain in 53.8%.

Table 2. Distribution of Extra-Articular Manifestations

Manifestation	Number (n)	Percentage (%)
Anemia	30	57.7
Pulmonary involvement	7	13.5
Ophthalmological involvement	5	9.6
Dermatological involvement	4	7.7
Cardiac involvement	1	1.9

Extra-articular manifestations were present in 33 patients (63.5%).

Table 3. Serological Profile

Parameter	Positive n (%)
Rheumatoid Factor	44 (84.6%)
Anti-CCP Antibody	47 (90.4%)

Table 4. Association Between Rheumatoid Factor Positivity and Extra-Articular Manifestations

RF Status	EAM Present	EAM Absent	Total
Positive	31	13	44
Negative	2	6	8

Chi-square = 5.24, p = 0.022

Table 5. Association Between Anti-CCP Positivity and Extra-Articular Manifestations

Anti-CCP Status	EAM Present	EAM Absent	Total
Positive	32	15	47
Negative	1	4	5

Chi-square = 4.18, p = 0.041

DISCUSSION

The present study demonstrated that rheumatoid arthritis predominantly affects middle-aged females, with a mean age of 43.48 years and female predominance of 88.5%. These findings are comparable to observations reported by Kalappan et al., Vij et al., and Al-Ghamdi et al., who documented a similar age distribution and female predominance among patients with rheumatoid arthritis.

Extra-articular manifestations were observed in 63.5% of patients, confirming the systemic nature of the disease. Comparable frequencies have been reported by Agrawal et al. and Al-Ghamdi et al. The prevalence observed in the present study may be attributed to the inclusion of patients with longer disease duration and high rates of seropositivity.

Anemia was the commonest extra-articular manifestation, affecting 57.7% of patients. Chronic inflammation, impaired iron metabolism, and cytokine-mediated suppression of erythropoiesis are recognized mechanisms contributing to anemia in rheumatoid arthritis.

Pulmonary involvement was the second most common extra-articular manifestation and included interstitial lung disease and pleural involvement. Pulmonary manifestations are increasingly recognized as important contributors to morbidity and mortality in rheumatoid arthritis.

The prevalence of rheumatoid factor positivity (84.6%) and anti-CCP positivity (90.4%) was high in the present study. Significant associations were observed between seropositivity and extra-articular manifestations. These findings support previous reports indicating that seropositive rheumatoid arthritis is associated with more severe disease, greater systemic involvement, and poorer prognosis.

The findings emphasize the importance of comprehensive evaluation and periodic screening for extra-articular manifestations in all patients with rheumatoid arthritis.

CONCLUSION

Rheumatoid arthritis is a chronic multisystem autoimmune disease with significant extra-articular involvement. In the present study, nearly two-thirds of patients exhibited systemic manifestations, with anemia being the most common extra-articular feature. Pulmonary, ophthalmological, dermatological, and cardiac manifestations were also observed. Rheumatoid factor and anti-CCP positivity were significantly associated with extra-articular involvement. Early diagnosis, regular monitoring, and prompt recognition of systemic manifestations are essential for reducing morbidity and improving long-term patient outcomes.

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