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Original Research Article

Clinical Profile of Rheumatoid Arthritis in a Tertiary Care Hospital

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Abstract

Background: Rheumatoid arthritis (RA) is a chronic, systemic autoimmune disorder that affects synovial joints and may lead to progressive disability. Although global data exist, regional variations in its clinical profile warrant local analysis.

Objectives: To evaluate the demographic, clinical, and laboratory characteristics of RA patients attending a tertiary care hospital in eastern India, and to assess the relationship between disease duration and severity.

Methods: A cross-sectional observational study was performed among patients fulfilling the 2010 ACR/EULAR criteria for RA. Demographic and clinical parameters were recorded; laboratory variables such as erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), and rheumatoid factor (RF) were assessed. Disease activity was calculated using the DAS28-ESR score. Statistical analysis included mean ± SD for continuous variables and Chi-square tests for categorical correlations ($p < 0.05$ significant).

Results: Sixty patients were studied (45 females, 15 males; mean age 43.2 ± 9.1 years). Morning stiffness (100%), joint pain (95%), and swelling (90%) were the commonest symptoms. RF positivity was 80%, and raised ESR/CRP values occurred in 85%. Disease severity increased significantly with duration ($p = 0.03$).

Conclusion: RA in this region predominantly affects middle-aged women and shows a direct relationship between disease duration and severity. Early diagnosis and timely DMARD therapy remain key to improved outcomes.

Keywords: Rheumatoid Arthritis; Disease Activity; Clinical Profile; Autoimmune Disorder; Eastern India.

Introduction

Rheumatoid arthritis (RA) is a chronic, systemic autoimmune disease marked by persistent synovial inflammation, joint pain, and progressive erosion of cartilage and bone.[1] Globally, it affects 0.5–1% of adults, with women predominating by a ratio of approximately 3:1.

Despite advances in diagnosis and therapy, RA continues to be a major cause of morbidity, functional disability, and economic burden worldwide.[4,5] Regional variation in its presentation and course has been reported, influenced by genetic background, socio-economic status, and health-care access. The Indian population presents unique epidemiological features: younger age at onset, late presentation to specialists, and heterogeneous seropositivity rates [2,6]. Most Indian studies have originated from northern and southern states; data from eastern India remain sparse.

Understanding the local pattern is essential for optimizing management strategies and resource allocation in government medical colleges serving rural catchments. Autoantibody production (RF and anti-CCP), elevated acute-phase reactants, and

radiological progression are well-documented determinants of disease severity [1, 7]. However, environmental triggers and delayed therapy initiation may contribute significantly to functional outcomes in low-resource settings. This study was therefore undertaken to characterize the demographic and clinical profile of RA patients attending a tertiary care centre in West Bengal and to correlate disease duration with severity indices derived from DAS28 scoring [1,2].

Materials and Methods

Study Design and Setting: This cross-sectional observational study was conducted in the Department of General Medicine, Bankura Sammilani Medical College & Hospital, West Bengal, India, in collaboration with the Department of General Medicine, Jhargram Government Medical College & Hospital. The hospital functions as a tertiary referral centre catering largely to rural and semi-urban populations of western West Bengal. The study period extended over twelve months, from March 2023 to February 2024.

Ethical Considerations: Prior to commencement, ethical clearance was obtained from the Institutional Ethics Committee of Bankura Sammilani Medical College & Hospital.

Written informed consent was secured from all participants in their vernacular language. Confidentiality of records and anonymity were strictly maintained.

Study Population: Patients attending the medicine out-patient and in-patient services who fulfilled the 2010 American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) classification criteria [1,3] for rheumatoid arthritis were consecutively enrolled.

Inclusion Criteria:

1. Adult's ≥ 18 years diagnosed with RA as per ACR/EULAR 2010 criteria [3].
2. Willingness to provide informed consent and comply with study procedures.

Exclusion Criteria:

1. Presence of overlapping connective-tissue disorders (e.g., SLE, systemic sclerosis).
2. Active infection, malignancy, or chronic kidney/liver disease confounding inflammatory markers.
3. Pregnancy or postpartum state < 6 months.
4. Prior exposure to biologic DMARDs > 6 months before recruitment.

Sample Size Determination: Based on previous regional prevalence studies and expected moderate disease activity in ~70 % of patients, the minimum sample size required for 95 % confidence and 10 % precision was 55. Considering a 10 % attrition, 60 patients were finally recruited.

Data Collection: A pre-tested proforma captured:

- **Demographic variables:** age, sex, occupation, socio-economic status, and residence (rural/urban).
- **Clinical variables:** duration of symptoms, morning stiffness (minutes), number of tender and swollen joints (28-joint count), presence of deformity, and extra-articular manifestations (vasculitis, nodules, scleritis, anemia of chronic disease etc.).
- **Laboratory parameters:** erythrocyte sedimentation rate (ESR, mm/h), C-reactive protein (CRP, mg/L), rheumatoid factor (RF, IU/mL), anti-cyclic citrullinated peptide (anti-CCP, U/mL), hemoglobin (g/dL), and serum creatinine (mg/dL).
- **Radiological assessment:** hand and foot X-rays were evaluated for peri-articular osteopenia and erosions by a single observer to reduce inter-reader bias.

Assessment of Disease Activity [7,8]: Disease activity was quantified using the Disease Activity Score (DAS28-ESR) formula:

$$\mathrm{DAS28} = 0.56 \times \sqrt{\mathrm{TJC28}} + 0.28 \times \sqrt{\mathrm{SJC28}} + 0.70 \times \ln(\mathrm{ESR}) + 0.014 \times \mathrm{GH}$$

Where TJC28 and SJC28 represent tender and swollen joint counts (28), and GH is the patient's global health assessment on a 100-mm visual analogue scale.

Classification:

- **Remission:** < 2.6
- **Mild:** 2.6 – 3.2
- **Moderate:** 3.2 – 5.1
- **Severe:** > 5.1

Therapeutic Profile [4,9,10]: Information on current disease-modifying anti-rheumatic drugs (DMARDs) and adjunct therapies was collected, including methotrexate, hydroxychloroquine, leflunomide, sulfasalazine, steroids, and NSAIDs.

Dosage and duration were recorded to correlate with disease activity and laboratory parameters.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 22 (IBM Corp., Armonk, NY). Continuous variables were expressed as mean ± standard deviation (SD) and compared by Student's t-test or ANOVA. Categorical variables were presented as percentages and compared by Chi-square or Fisher's exact test. Correlation between disease duration and severity was evaluated by Pearson's correlation coefficient. A p-value < 0.05 was considered statistically significant.

Quality Control and Bias Reduction

To ensure consistency:

- A single trained rheumatology registrar performed joint counts.
- All blood samples were analyzed in the same institutional laboratory using standardized assays.
- Radiographs were evaluated blinded to clinical data.
- Ten percent of data entries were randomly audited for accuracy.

Demographic Characteristics: A total of 60 patients with rheumatoid arthritis were included in the analysis. The mean age of the cohort was 43.2 ± 9.1 years (range: 27–62 years).

Females constituted the majority (75%, n = 45), while males accounted for 25% (n = 15), giving a female-to-male ratio of 3:1. Most patients belonged to the 40–49 years age group, representing the peak prevalence.

Socioeconomic distribution revealed that 58% belonged to the lower-middle class as per the modified Kuppuswamy index.

Nearly two-thirds (63%) were from rural backgrounds, indicating the predominantly rural catchment of the study population.

Table 1: Demographic Profile of Patients with Rheumatoid Arthritis (n = 60)

Parameter	Subgroup	Frequency (%)	Mean ± SD
Age (years)	20–29	5 (8.3%)	
	30–39	14 (23.3%)	
	40–49	25 (41.7%)	
	50–59	12 (20.0%)	
	≥ 60	4 (6.7%)	**43.2 ± 9.1**
Gender	Female	45 (75%)	
	Male	15 (25%)	
Residence	Rural	38 (63.3%)	
	Urban	22 (36.7%)	
Socioeconomic Class	Upper	3 (5%)	
	Middle	22 (36.7%)	
	Lower-middle	35 (58.3%)	

Clinical Features: All patients presented with joint pain, while morning stiffness was universal (100%) and lasted ≥ 60 minutes in 70% of cases.

Symmetrical small joint involvement was typical, particularly in the metacarpophalangeal and proximal interphalangeal joints. Large joint involvement was observed in 45% (knees and shoulders most common). Extra-articular manifestations were noted in 23% of patients, predominantly anemia of chronic disease (15%), rheumatoid nodules (5%), and episcleritis (3%). Deformities (ulnar deviation, swan-neck) were seen in 18% of the total cohort, most commonly in patients with >5 years' disease duration.

Table 2: Distribution of Clinical Manifestations

Clinical Feature	Frequency (n=60)	Percentage (%)
Morning stiffness	60	100
Symmetrical joint pain	57	95
Joint swelling	54	90
Fatigue / Malaise	48	80
Deformities	11	18
Extra-articular involvement	14	23
Rheumatoid nodules	3	5
Anemia of chronic disease	9	15
Episcleritis	2	3

Laboratory Findings: Rheumatoid factor (RF) was positive in 80% (48/60) of cases, while anti-CCP antibody positivity was found in 76.6%. The mean ESR was 54.7 ± 18.9 mm/h, and CRP averaged 23.1 ± 8.6 mg/L. Anemia (Hb < 11 g/dL) was found in 60% of patients. A significant correlation ($r = 0.48$, $p < 0.01$) was observed between disease duration and ESR levels, suggesting higher inflammatory burden with chronicity.

Table 3: Laboratory Characteristics of Study Population

Parameter	Mean ± SD	Reference Range	Abnormal (%)
Hemoglobin (g/dL)	10.8 ± 1.2	12–16	60
ESR (mm/h)	54.7 ± 18.9	< 20	85
CRP (mg/L)	23.1 ± 8.6	< 5	83
RF (IU/mL)	76.4 ± 24.3	< 14	80
Anti-CCP (U/mL)	42.5 ± 17.2	< 20	76.6

Disease Activity (DAS28-ESR) [8,99]: The mean DAS28-ESR score was 4.87 ± 1.01, indicating moderate-to-severe disease activity in most patients.

Using established cut-offs:

- **Remission:** 6 patients (10%)
- **Mild:** 7 (12%)
- **Moderate:** 28 (46%)
- **Severe:** 19 (32%)

There was a clear trend toward higher DAS28 scores with increasing disease duration.

Correlation between Disease Duration and Severity: Patients were grouped by disease duration: <2 years, 2–5 years, and >5 years. The mean DAS28 scores were 3.89 ± 0.84, 4.75 ± 0.92, and 5.62 ± 0.88 respectively. ANOVA analysis revealed a statistically significant difference ($p = 0.03$).

Table 4: Relationship between Disease Duration and DAS28-ESR Severity

Disease Duration	n	Mean DAS28 ± SD	Severity Category	p-value
< 2 years	20	3.89 ± 0.84	Mild–Moderate	
2–5 years	24	4.75 ± 0.92	Moderate	
> 5 years	16	5.62 ± 0.88	Severe	**0.03**

Therapeutic Pattern [9,11]: All patients were on conventional synthetic DMARDs, with methotrexate being the cornerstone drug (85%), followed by hydroxychloroquine (68%) and leflunomide (32%). Corticosteroids were used as bridging therapy in 70% of cases, while only 3 patients (5%) required biologics during follow-up.

Adherence to therapy correlated with lower DAS28 scores ($p = 0.04$).

Table 5: Therapeutic Profile of Study Population

Drug Category	Agent	Frequency (n)	Percentage (%)
csDMARDs	Methotrexate	51	85
	Hydroxychloroquine	41	68
	Leflunomide	19	32
Glucocorticoids	Prednisolone (≤10 mg/day)	42	70
Biologic DMARDs	Etanercept / Adalimumab	3	5
NSAIDs	Diclofenac / Etoricoxib	48	80

Discussion

Rheumatoid arthritis (RA) is a heterogeneous autoimmune disease, and the present study provides a focused snapshot of its clinical spectrum in a rural-dominant tertiary-care setting of eastern India [4,5,6]. The mean age of presentation (43.2 ± 9.1 years) in this series mirrors observations from similar Indian cohorts, confirming that RA affects individuals during their most productive years. The marked female predominance (3: 1) is also consistent with hormonal and genetic influences noted in prior Indian studies. Our findings highlight the continuing diagnostic delay among rural patients, as reflected by the high proportion with moderate-to-severe disease activity (78 % combined). Nearly one-third of the cohort already had joint deformities or extra-articular involvement at first assessment.

This underscores the need for community-level awareness and early referral pathways. The frequency of rheumatoid-factor (80 %) and anti-CCP (76.6 %) positivity corresponds closely with data reported from North India (RF 75–85 %) and South India (anti-CCP 70–80 %). Elevated acute-phase reactants (ESR 54.7 ± 18.9 mm/h; CRP 23.1 ± 8.6 mg/L) in the majority of patients reaffirm the inflammatory burden of untreated disease.

The statistically significant correlation between disease duration and DAS28-ESR ($p = 0.03$) substantiates cumulative joint damage and systemic inflammation over time [8,12].

Therapeutically, methotrexate remained the cornerstone (85 %), reflecting adherence to current EULAR and APLAR recommendations for first-line csDMARD therapy [9,11].

Hydroxy chloroquine and leflunomide were frequently used in combination regimens. Only a minority required biologics, largely due to cost constraints and the availability of government supply programs. This pattern illustrates real-world management limitations in resource-restricted regions despite clear evidence of efficacy from international trials.

Comparative evaluation with previous Indian and global studies shows similar demographic trends but divergent access to advanced therapy. For instance, studies from tertiary centers in Western countries report higher remission rates (30–40 %) owing to early biologic initiation and tight control strategies. In contrast, our remission rate of 10 % demonstrates the gap between guidelines and practice in semi-urban India.

Extra-articular manifestations in 23 % of our patients, primarily anemia and rheumatoid nodules, were lower than older Indian reports (30–40 %).

This may reflect earlier detection or under-reporting of subtle organ involvement. Anemia correlated with both ESR and DAS28 scores, confirming its role as an inflammatory marker rather than solely nutritional deficiency [8,11].

Overall, the study reinforces the multifactorial determinants of disease severity—socio-economic status, delayed diagnosis, and incomplete treatment adherence. Integrating community education, early rheumatology referral, and subsidized DMARD access could significantly improve outcomes.

Limitations

1. The sample size (n = 60) restricts generalisability.
2. Radiological scoring (Sharp/van der Heijde) was not performed due to resource limitations.
3. Long-term follow-up and functional outcome measures (HAQ-DI) were beyond the cross-sectional design.
4. Single-center data may not capture regional heterogeneity across eastern India.

Despite these limitations, the study provides valuable baseline information for future longitudinal research and policy planning.

Conclusion

Rheumatoid arthritis in this tertiary-care population predominantly affects middle-aged women, with most patients presenting at moderate-to-severe disease activity. Disease duration shows a clear positive correlation with inflammatory markers and DAS28-ESR score. Conventional DMARDs, particularly methotrexate-based regimens, remain the mainstay of therapy, while limited biologic use reflects economic barriers.

Early detection, prompt DMARD initiation, and regular disease-activity monitoring are imperative to reduce disability and enhance quality of life for RA patients in low-resource Indian settings.

Authors Contribution:

Dr. Shanmugham.Saranya Devi, Dr. Snehasis Das, Dr. Manoj Kumar Das Dr. Saymal Kundu contributed to the conceptualization, study design, data collection and data analysis required for this paper. Dr. Sudip Barua, Dr. Vignesh Rajendran, Dr. Shyamali Hansda was responsible for compiling, writing and editing the manuscript. All authors mentioned above reviewed and approved the final version of the manuscript.

Disclaimer

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References:

1. Aletaha D, et al. 2010 Rheumatoid Arthritis Classification Criteria. Ann Rheum Dis. 2010; 69:1580-1588.
2. Harrison's Principles of internal medicine, McGraw Hill Education, 18th edition, page no-2738
3. Malaviya AN, et al. Clinical spectrum of RA in Northern India. J Assoc Phys India. 1998; 46:459-460.
4. Drosos AA, et al. Socio-economic determinants of delayed diagnosis in RA. Clin Rheumatol. 2021; 40:45-53.
5. Chopra A, et al. Epidemiology of RA in India: An update. Int J Rheum Dis. 2013; 16:219-226.
6. Kumar A, et al. Disease activity and functional status in RA patients in Eastern India. Indian J Rheumatol. 2019; 14:87-93.
7. Prevalence of rheumatoid arthritis in the adult Indian population, Rheumatology Internatio nal November 1993, Volume 13, Issue 4, pp 131–13
8. Firestein Prevoo M, et al.Validity and reliability of joint indices. A longitudinal study in patients with recent onset rheumatoid arthritis, British J.Rheumatol.1993;32:589-594
9. Scott DL, et al. RA management and outcomes over three decades. Lancet. 2010; 376:1094-1108.

10. Application of the 2010 ACR/EULAR classification criteria in patients with very early inflammatory arthritis: analysis of sensitivity, specificity and predictive values in the SAVE study cohort.
11. Smolen JS, et al. EULAR recommendations for management of RA. Ann Rheum Dis. 2020;79:685-699. Modifiable risk factors for RA: prevention, better than cure? Manjari Lahiri, Catharine Morgan, Deborah P. M. Symmons, and Ian N. Bruce Rheumatology (Oxford). 2012 Mar; 51(3): 499–512.