

**ORIGINAL ARTICLE****A STUDY ON CLINICAL PROFILE OF PATIENTS PRESENTING WITH RHEUMATOID ARTHRITIS IN A TERTIARY CARE HOSPITAL OF PUNE CITY**

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**ABSTRACT**

**Background:** The clinical picture of Rheumatoid arthritis is mainly related to the affection of peripheral joints. The present study was planned with an objective to study clinical and laboratory profile of patients presenting with rheumatoid arthritis.

**Methodology:** The present study was a cross-sectional study conducted on cases of rheumatoid arthritis. Special emphasis was placed on the clinical presentation grading at the time of presentation with associated etiological factors and exacerbating factors. All the patients were also subjected to necessary blood investigations and relevant radiological investigations.

**Results:** Among the total 100 cases of RA, maximum incidence of rheumatoid arthritis was seen in the age group of 31 – 40 years (46%) and 41-50 years (30%). The commonest clinical features noted was joint pain (100%), commonest joint involved was proximal interphalangeal and metacarpophalangeal joints (96%), commonest upper limb deformity was ulnar deviation of digits (40%) and commonest radiological changes were juxta articular osteopenia and soft tissue swelling (74%). Rheumatoid arthritis factor was positive in 76 % (76 cases) and Anti CCP was positive in 94% (94 cases) of the patients.

**Conclusion:** It is concluded from the present study that most common predisposing factors were family history and smoking and commonest exacerbating factor was climatic changes. The most common clinical features are morning stiffness, joint pain, joint swelling and limitation of joint movement.

**Keywords:** Rheumatoid arthritis, clinical profile, laboratory profile, joint involvement

**INTRODUCTION**

Rheumatoid arthritis is one of the commonest connective tissue disorder in the world.<sup>1</sup> Worldwide, the prevalence of rheumatoid arthritis is 0.8% of the total population. In India, the prevalence of the disease is estimated to be about 0.75%.<sup>2</sup> Rheumatoid arthritis occurs throughout the world and affects all races, but some races are less affected, such as the rural sub-Saharan Africa and Carribean blacks.<sup>3</sup>

The clinical picture of Rheumatoid arthritis is mainly related to the affection of peripheral joints. Symmetric involvement of hands, wrist, knee and feet are classically described. Extra-articular involvement of organs like skin, heart, lungs and eyes can also be significant. Prodromal symptoms such as fatigue, weight loss, transient pain in muscles and joints, sweating, paraesthesia and migrant swelling are often

reported before the onset of the classical clinical picture.<sup>4</sup>

There is no single diagnostic test for the confirmation of Rheumatoid arthritis. Investigations are therefore used only to supplement the clinical findings. The most significant investigatory findings increased levels of rheumatoid factor and radiographic changes in the joints. Erythrocyte sedimentation rates, C-reactive protein levels, circulating immune complexes, and platelet counts are often elevated in Rheumatoid arthritis and serve as indicators of disease activity.<sup>5</sup> The present study was planned with an objective to study clinical and laboratory profile of patients presenting with rheumatoid arthritis.

**METHODOLOGY**

The present study was a cross-sectional study conducted on cases of rheumatoid arthritis coming to the Outdoor Patient Department (OPD) and Indoor Patient Department (IPD) of Padmashree Dr. D.Y. Patil Medical College, Hospital and Research Centre, Pimpri, Pune. The data collection of study was conducted over the period of 6 months from January 2014 to June 2014.

All the cases of rheumatoid arthritis in the outpatient and inpatient department were evaluated according to the predesigned questionnaire. Special emphasis was placed on the clinical presentation grading at the time of presentation with associated etiological factors and exacerbating factors. All the patients were also subjected to necessary blood investigations and relevant radiological investigations. The cases which are included in the study were more than 20 years of age and having joint pains, signs of inflammation, involving mono or polyarticular joints that satisfied the diagnostic criteria for rheumatoid arthritis. Those cases who had arthritis as part of an established disease, such as, TB arthritis, gonococcal arthritis and with complaints of arthralgia that did not satisfy the diagnostic criteria were excluded from the study. Approval of the Institutional Ethical Committee was taken prior to the commencement of the study. The cases were included in the study after taking informed voluntary consent of the participants.

Diagnostic Criteria: Revised Criteria for Diagnosis, American College of Rheumatology

1. Morning stiffness - This occurs in and around the joints and lasts at least 1 hour before maximal improvement.
2. Arthritis of 3 or more joint areas - At least 3 joint areas simultaneously have soft tissue swelling or fluid (not bony overgrowth) observed by a physician. The 14 possible areas include the right and left proximal interphalangeal (PIP), metacarpophalangeal (MCP), wrist, elbow, knee, ankle, and metatarsophalangeal (MTP) joints.
3. Arthritis of hand joints - At least one area in a wrist, MCP, or PIP joint is swollen.
4. Symmetric arthritis (simultaneous involvement of the same joint areas on both sides of the body). Bilateral involvement of PIPs, MCPS, and MTPS is acceptable without absolute symmetry.
5. Rheumatoid nodules - Subcutaneous nodules are present over bony prominences or extensor surfaces or in juxta-articular regions.
6. Serum RF - Abnormal amounts of serum Rheumatoid factor are demonstrated by any method for which the result has been positive in fewer than 5% of healthy control subjects.
7. Radiographic changes typical of RA on postero-anterior hand and wrist radiographs, which must include erosions or unequivocal bony decalcification localized in or most marked adjacent to the

involved joints: Osteoarthritic changes alone do not qualify.

The presence of 4 criteria supports the diagnosis of RA. Criteria 1-4 must be present for at least 6 weeks, and a physician must observe criteria 2-5. The exacerbating factors, type of onset and clinical features were recorded according to the description by the patient and the review of existing medical records. A positive family history was defined as the presence of diagnosed rheumatoid arthritis in at least one first degree relative of the patient.

The type of onset was inferred from the patient's history, supplemented by a review of the medical documents. The key points noted in this aspect were whether the disease was insidious in onset or acute in onset, whether it was polyarticular or monoarticular and whether it was symmetrical or asymmetrical involvement. Palindromic and polymyalgic types of disease onset were also enquired about. Palindromic onset was considered inpatients who reported recurrent episodes of oligoarthritis and met the diagnostic criteria for rheumatoid arthritis without any record of significant radiological erosions. Polymyalgic onset was considered in patients who reported pain and stiffness of shoulder and hip joints with proximal myalgia.

The investigations were interpreted with the following values-

1. Anaemia - Hemoglobin less than 10 gm/dl.
2. Leucocytosis-Total leucocyte count greater than 11,000 cu.mm
3. Leucopenia-Total leucocyte count less than 4,000 cu.mm
4. Thrombocytosis- Platelet count greater than 4,50,000 cu.mm
5. Raised ESR -ESR greater than 4mm in first hour in males and 10mm in first hour infemales
6. Raised CRP-CRP levels greater than 5 mg/dl for the upper limit of normal as set by the laboratory.
7. Raised serum globulin -Serum globulin level higher than the reference cut off set by the
8. Raised Alkaline Phosphatase - Serum Alkaline Phosphatase greater than 125 U/l for (or greater than the upper limit of normal set by the laboratory)

## RESULTS

There were total 100 cases of RA included in the study. The maximum incidence of rheumatoid arthritis was seen in the age group of 31 – 40 years (46%) and 41-50 years (30%). It was seen that 84% cases with RA were females (84 cases) and 16% were males (16 cases).

**Table 1: Clinical features of cases with rheumatoid arthritis (N=100)**

Clinical features	Cases
Fever	26
Joint pain	100
Joint swelling	84
Morning stiffness	86
Deformity	74
Limitation of movements	80
Carpel tunnel syndrome	12
Generelised lymphadenopathy	10
Splenomegaly	12

**Table 2: Joints involvement in Rheumatoid arthritis cases (N=100)**

Joints involved	Cases
Proximal interphalangeal	96
Metacarpophalangeal	96
Wrist	66
Elbow	36
Shoulder	4
Subtalar	46
Ankle	12
Knee	12
Cervical spine	12

**Table 3: Deformities in Rheumatoid arthritis cases (N=100)**

Deformity	Cases
Swan neck deformity	26
Boutonniere deformity	10
Z deformity	24
Ulnar deviation of digits	40
Eversion of subtalar joints	6
Plantar subluxation of metatarsal heads	4
Hallux valgus	4

**Table 4: Radiological changes in Rheumatoid arthritis cases (N=100)**

Radiological changes	Cases
Juxtaarticular osteopenia	74
Soft tissue swelling	74
Joint space narrowing	60
Joint erosions	40
Intra-articular loose bodies	10
Joint subluxation	4

**Table 5: Extra-articular manifestations in Rheumatoid arthritis cases (N=100)**

Manifestations	Cases
Rheumatoid nodules	10
Mitral regurgitation	4
Sjogrens syndrome	4
Episcleritis	10
Periodontitis	4
Pleuritis	6
Coronary artery disease	4

**Table 6: Blood investigations report in Rheumatoid arthritis cases (N=100)**

Blood investigations	Cases
Anemia	66
Leukocytosis	16
Thrombocytosis	26
Raised ESR	86
Raised CRP	84
Raised alkaline phosphatase	20
Raised Serum globulin	24

The commonest clinical features noted in all the patients were joint pain (100%), and morning stiffness (86%) followed by joint swelling (84%, 84 cases), joint deformity (74%, 74 cases) (Table 1).

The commonest joint involved were proximal interphalangeal and metacarpophalangeal joints (96 cases each, 96%) (Table 2). The commonest upper limb deformity was ulnar deviation of digits (40 cases, 40%) followed by swan neck deformity (26 cases, 26%), Z deformity (24 cases, 24%), boutonniere deformity (10 cases, 10%). The lower limb deformities were eversion of subtalar joints (6 cases, 6%), plantar subluxation of metatarsal heads (4 cases, 4%), hallux valgus (4 cases, 4 %) (Table 3).

The commonest radiological changes were juxta articular osteopenia and soft tissue swelling (74%), followed by joint space narrowing (60 cases, 60%) , joint erosions ( 40 cases , 40%), intra-articular loose bodies ( 10 cases , 10%), joint subluxation ( 4 cases, 4%) (Table 4).

Only 34 percent in this study developed extra articular manifestations. Commonest manifestations were rheumatoid nodules (10%, 15 cases), episcleritis (10% 10cases), pleuritis (4 cases, 4%), coronary artery disease (4 cases, 4% mitral regurgitation (4 cases, 4%), sjogrens syndrome (4 cases, 4%), periodontitis (4 cases, 4%) (Table 5). Rheumatoid arthritis factor was positive in 76 % (76 cases) and Anti CCP was positive in 94% (94 cases) of the patients of rheumatoid arthritis.

The most common abnormality was raised ESR (86 cases, 86%), raised CRP (84 cases, 84%). The common abnormalities were anemia (66 cases, 66%), thrombocytosis (26 cases, 26%), raised serum globulin levels (20 cases, 20%), leukocytosis in 16% and leucopenia in 4% (Table 6).

**DISCUSSION**

In the present study, a positive family history of the disease in first degree relatives was noted in 28% of patients. The first degree relatives of patients with rheumatoid arthritis are at four times increased risk of developing the disease as compared to the normal population.<sup>3</sup> The heritability of RA, i.e., the extent to

which susceptibility to disease is explained by genetic variation in the population, has been estimated at 60%. A report on the family history of RA showed that a) 7% of the fathers of patients as opposed to 3% of fathers of controls suffered from arthritis; 15% of mothers of patients as opposed to 9% mothers of controls Suffered from arthritis b) of 2,151 brothers and sisters of patients with RA, 82 had arthritis and of 2,143 brothers and sisters of the controls 38 had arthritis. These values were found to be statistically significant.<sup>6</sup>

In the present study, 24% of patients reported that there exacerbation of symptoms with climatic changes requiring consultation to the physician and/or hospital admission. In these patients, it was cold weather that usually exacerbated the symptoms.<sup>6</sup> Smoking was a risk factor for rheumatoid arthritis in 12% of patients in this study. Smoking has been reported to be a risk factor in many study in RA.<sup>7</sup> Tueresson and colleagues also proposed that Smoking is one of the risk factors for extraarticular involvement of the disease.<sup>8</sup> Certain studies have also shown that smoking is one of the risk factors for predictor of RA primarily in the subset of patients with RA associated HLA-DRB1 genotype thus providing a classical example of the interplay between genetic and environmental factors in predisposing to RA.<sup>7</sup>

The predominant clinical features were joint pain, joint swelling, limitation of the joint all the patients in the study. Grassi et al reported that the commonest triad of symptoms indicted by synovitis includes pain in the joint, joint swelling and motion impairment.<sup>9</sup> They also reported that morning stiffness lasting at least 1 hour before maximal improvement is typical of RA.<sup>9</sup> Fever was reported by 26% of the patients in this study.<sup>6</sup>

The involvement of of joints in this study was maximum in joints of hand. The joints involved were proximal interphalangeal joints, metacarpophalangeal joints, wrist joint, and elbow joint. A review on rheumatoid arthritis published that out of 532 patients with rheumatoid arthritis, 520 patients reported involvement of the peripheral joints of hand and feet.<sup>6</sup> Jacoby et al also reported that in their study on 100 patients, the most commonly involved joints were metacarpophalangeal joints , wrist joint, and proximal interphalangeal.<sup>10</sup>

The hand deformities noticed in this study were ulnar deviation of digits (40%), swan neck deformity (26%), Z deformity (28%), and boutonniere deformity (10%). These findings can be compared to Qayyum et al in their study on 50 patients. In their studies the ulnar deviation (50%), swan neck deformity (72%), Z deformity (68%) and boutonniere deformity (80%).<sup>11</sup> Thus number of patients with joint deformity was lower in present study, and probably

due to the shorter duration of the study period. The lower limb deformities noted in the present study were eversion of subtalar joint (6%), plantar subluxation of metatarsal heads (4%), hallux valgus (4%). The deformities reported by Qayyum and coworkers were valgus deformity (42%) and pes planus (14%).<sup>11</sup>

RF is one of the classical findings described in association with rheumatoid arthritis. In present RF factor was positive in 76% patients. Akil et al have reported that 80% of patients with rheumatoid arthritis are seropositive for rheumatoid factor.<sup>1</sup> Lindqvist et al reported that in their study on 168 cases of RA, 71% were positive for rheumatoid factor.<sup>12</sup> Thus, the rheumatoid factor positivity in this study is comparable to that of other studies.

Anti CCP is positive in 94% patient in this study. Its diagnostic specificity approaches 95%, so a positive test for anti-CCP antibodies in the setting of an early inflammatory arthritis is useful for distinguishing RA from other forms of arthritis. The presence of RF or anti-CCP antibodies also has prognostic significance, with anti-CCP antibodies showing the most value for predicting worse outcomes. The detection of a disease-specific autoantibody like anti-CCP could be of great diagnostic and therapeutic importance in early cases of RA while symptoms are mild.<sup>13</sup>

## CONCLUSION

It is concluded from the present study that most common predisposing factors were family history and smoking and commonest exacerbating factor was climatic changes. The most common clinical features are morning stiffness, joint pain, joint swelling and limitation of joint movement. Extraarticular manifestations were present in less than half of the study population. The commonest manifestations were episcleritis and rheumatic nodules. Three fourth of the study population were seropositive for rheumatoid factor. Almost whole of the study population was seropositive for antiCCP antibodies.

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