

Clinical Profile of Patients with Rheumatoid Arthritis Attending Tertiary Care Hospital

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Abstract

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Introduction: A major portion of disease burden due to RA, including the excess mortality, appears to be due to its extra-articular manifestations. Extra-articular manifestations are seen in nearly 50% of patients with RA, the commonly affected sites being the skin, eye, heart, and lungs. The prevalence of clinically "severe" extra-articular manifestations ranges up to 40% [5] and they are associated with severe active disease and increased mortality compared to the general population. *Methodology:* All patients newly/previously diagnosed to have RA & were willing to participate in the study were evaluated as per the proforma designed for the purpose of the study. All patients were diagnosed as rheumatoid arthritis on the basis of 2010 ACR / EULAR. *Results:* Among 50 patients joint deformities were found in 15 patients (30%). These included swan neck deformity in 13 patients, Boutonniere deformity in 9 patients, subluxation of superior radio-ulnar joint in 7 patients, ulnar deviation of hand in 5 patients, fixed flexion deformity of elbow in 2 patients and flexion deformity of hand in 1 patient. *Conclusion:* Mean duration of disease was longer in females but the difference was not significant statistically

Keywords: Rheumatoid Arthritis; Boutonniere Deformity; Swan Neck Deformity.

Introduction

Rheumatoid arthritis is a chronic systemic inflammatory disorder of unknown cause. It is a systemic inflammatory disease and affects 1-2% of the general population. Rheumatoid arthritis principally affects joints, producing a non-suppurative synovitis that often progress to tissue destruction of articular cartilage and ankylosis of joints [1,2]. However, it may affect many other tissues like skin, blood vessels, heart, lungs, and muscles. The prevalence of Rheumatoid arthritis is approximately 0.8% of the population (range 0.3 to 2.1%) but in India it is not known exactly. Women are affected three times more commonly than men. Onset of Rheumatoid arthritis is more frequent during third to fifth decades of life.

A major portion of disease burden due to RA, including the excess mortality, appears to be due to its extra-articular manifestations [3,4]. Extra-articular manifestations are seen in nearly 50% of patients with RA, the commonly affected sites being the skin, eye,

heart, and lungs [4]. The prevalence of clinically "severe" extra-articular manifestations ranges up to 40% [5] and they are associated with severe active disease and increased mortality compared to the general population [6,7].

Pulmonary involvement is one of the common extra-articular manifestations of RA, and accounts for the second most common cause of death (18%) after infection (27%) in patients with RA [8]. Pleuro-pulmonary manifestations are more common in males [9]. The most common lung parenchymal manifestation is pulmonary fibrosis; others include pleuritis, pleural effusion, pulmonary nodules, pulmonary hypertension, pulmonary vasculitis, airway obstructions, obliterative bronchiolitis, organizing pneumonia, medications and opportunistic lung infections.

Rheumatoid arthritis (RA) is a chronic inflammatory disease of unknown etiology marked by symmetric, peripheral poly arthritis. It is the most common form of chronic inflammatory arthritis and often results in

joint damage and physical disability. The incidence of RA increases between 25 and 55 years of age, after which it plateaus until the age of 75 and then decreases. It occurs in approximately 1% of the population and adversely affects quality of life, functional status, and survival. The presenting symptoms of RA typically result from inflammation of the joints, tendons, and bursae. Patients often complain of early morning joint stiffness lasting more than 1 hour and easing with physical activity.

Joint involvement is typically poly articular and symmetrical, usually sparing the distal interphalangeal (DIP) joints. The joints most commonly affected are metacarpophalangeal, proximal interphalangeal and wrists, followed by metatarsophalangeal and shoulders. The least commonly affected are the hips and spine. Temporomandibular and cervical spine involvement often occurs even in the early stages. Progressive destruction of the joints and soft tissues may lead to chronic, irreversible deformities. Ulnar deviation results from subluxation of the MCP joints, with subluxation of the proximal phalanx to the volar side of the hand. Hyperextension of the PIP joint with flexion of the DIP joint ("swan-neck deformity"), flexion of the PIP joint with hyperextension of the DIP joint ("boutonnière deformity"), and subluxation of the first MCP joint with hyperextension of the first inter-phalangeal joint ("Z-line deformity") also may result from damage to the tendons, joint capsule, and other soft tissues in these small joints.

In 2010, a collaborative effort between the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) revised the 1987 ACR classification criteria for RA in an effort to improve early diagnosis with the goal of identifying patients who would benefit from early introduction of disease-modifying therapy

Application of the newly revised criteria yields a score of 0–10, with a score of 6 fulfilling the requirements for definite RA. The new criteria include a positive test for serum anti-cyclic citrullinated peptide antibodies as an item, which carries greater specificity for the diagnosis of RA than a positive test for rheumatoid factor. The newer classification criteria do not take into account if the patient has rheumatoid nodules or radiographic joint damage because these findings occur rarely in early RA. It is important to emphasize that the new 2010 ACR-EULAR criteria are "classification criteria" as opposed to "diagnostic criteria" and serve to distinguish patients at the onset of disease with a high likelihood of evolving into a chronic disease with persistent synovitis and joint

damage. The presence of radiographic joint erosions or subcutaneous nodules may confirm the diagnosis in the later stages of the disease.

Methodology

Inclusion Criteria

- Patients diagnosed with RA newly or those being followed up for the disease.
- Consenting to participate in the study.

Exclusion Criteria

- Patients with Pre-existing lung disease-COPD, Pulmonary Tuberculosis, Bronchiectasis, Bronchial asthma.
- Smokers.
- Patients with Thoracic abnormality.
- Patients with Vertebral abnormalities.

All patients newly/previously diagnosed to have RA & were willing to participate in the study were evaluated as per the proforma designed for the purpose of the study. All patients were diagnosed as rheumatoid arthritis on the basis of 2010 ACR / EULAR.

Results

Among the 50 patients who were included in the study, 38 (76%) were females and 12 (24%) were males, a ratio of Male: Female 1:3.2.

Age of the study individuals ranged from 22 – 64 years. Mean age of the patients was 46.3 ± 9.75 years. Mean age of female and male patients were 45.22 ± 10.26 (range 22- 64years) and 48.83 ± 9.58 (range 33- 61 years) respectively. Males were found to be older than the females in our study. However, the difference was not statistically significant ($p = 0.286$).

Mean duration of the disease was 5.18 ± 6.52 years (range 1-26 years). Mean duration of RA in males was 4.08 ± 3.60 years (range 1– 12) & in females was 5.53 ± 7.20 years (range 1 - 26). Mean duration of disease was longer in females but the difference was not significant statistically ($p = 0.507$).

All 50 (100%) patients had early morning stiffness. Mean duration of EMS was 133.6 ± 72.33 minutes (range 30 – 300 minutes). The number of joints involved was 31 ± 7.66 (range 10 – 42) which includes

both tender and swollen joints. Number of small joints involved was 24.28 ± 6.06 (range 6 – 32). Number of large joints involved was 7.32 ± 2.08 (range 4 – 10)

Among 50 patients joint deformities were found in 15 patients (30%). These included swan neck deformity

in 13 patients, Boutonniere deformity in 9 patients, subluxation of superior radio-ulnar joint in 7 patients, ulnar deviation of hand in 5 patients, fixed flexion deformity of elbow in 2 patients and flexion deformity of hand in 1 patient.

Table 1: Sex distribution

Sex	Frequency	Percentage
Female	38	76%
Male	12	24%

Table 2: Age and sex distribution

Age Groups	20-29	30-39	40-49	50-59	60-69
Female	4	7	13	11	3
Male	0	2	6	3	1

Table 3: Mean duration of RA

	Mean	Standard deviation	Range
RA duration in years	5.18	6.52	1 to 26

Table 4: RA duration frequency distribution

RA duration in years	Frequency/No. of patients	Percentage
1	15	30%
2	12	24%
3	8	16%
4	1	2%
5	1	2%
6	1	2%
7	1	2%
8	2	4%
10	2	4%
>10 years	7	14%

Table 5: Mean Duration of RA in males and females

	Statistics	Female	Male	P-value
Duration of RA in years	Mean	5.53	4.08	0.507
	SD	7.20	3.60	
	Range	1 to 26	1 to 12	

Table 6: Mean number of joint involvement

	Total joints	Small joints	Large joints
Mean	31.64	24.28	7.32
SD	7.66	6.06	2.08
Range	10 to 42	6 to 32	4 to 10

Table 7: Prevalence of joint deformity

Deformity	Number of patients
No	35
Yes	15

Discussion

Age of the study individuals ranged from 22–64 years. Mean age of the patients in the study was

46.3 ± 9.75 years. This is in concordance with the findings of the study conducted by Kulkarni AA in 2007, who found a mean age of 46.5 years in his subjects. 92 Mean age of patients in a study conducted

by Mary laly in 2013 was 45.75 ± 10.7 years.⁹⁷ Mean age of females and males were 45.22 ± 10.26 years (range: 22- 64 years) and 48.83 ± 9.58 years (range: 33 - 61 years) respectively. In a study conducted by Raniga S et al, the mean age of females and males were 45.8 years and 48.4 years respectively, the mean age of males being higher [10]. This is similar to the findings in our study, males were found to be older than the females [11]. However, the difference was not statistically significant ($p=0.286$).

In our study the female to male ratio was 3.2:1. This is similar to the findings of studies conducted by Arnett FC et al in 1998 and by Raniga S et al in 2006, both of whom documented a female to male ratio of 3:1.⁹⁸ Female to male ratio is slightly higher in our study compared with the other studies. However, it falls within the range of female to male ratio in RA of 2:1 to 4:1, which is documented in most of the studies.

Mean duration of the disease was 5.18 ± 6.52 years (range 1 – 26 years) in our study. This was similar to the findings of a study done by Kulkarni AA, who found mean disease duration of 5.4 years.⁹² Mean duration of the disease in a study conducted by Mary laly was 5.06 ± 6.08 years.⁹⁷ In our study, mean duration of RA in males was 4.08 ± 3.60 years (range 1– 12) & in females was 5.53 ± 7.20 years (range 1 - 26). Mean duration of disease was longer in females but the difference was not significant statistically ($p=0.507$).

The number of joints involved was 31 ± 7.66 (range 10– 42) which includes both tender and swollen joints. This was similar to the findings of Peter EL et al where mean number of joints involved was 31 ± 18.99 Number of small joints involved was 24.28 ± 6.06 (range 6– 32). Number of large joints involved was 7.32 ± 2.08 (range 4 –10).

Among 50 patients joint deformities were found in 15 patients (30%). This is in concordance with the study conducted by Kulkarni AA in 2007, where he found deformity of at least one joint in 29.3% of his patients.⁹² In a study conducted by Mary laly, joint deformity was found in 31% of patients.⁹⁷ Joint deformities in our study included swan neck deformity in 13 patients, Boutonniere deformity in 9 patients, subluxation of superior radio-ulnar joint in 7 patients, ulnar deviation of hand in 5 patients, fixed flexion deformity of elbow in 2 patients and flexion deformity of hand in 1 patient.

Rheumatoid factor was positive in 39 (78 %) patients of whom 29 (58%) were females and 10 (20%) were males. Similar finding (76% RA factor positivity) was seen in a study done by Kulkarni AA, but in the study

done by Raniga S et al, positive RA factor was seen in 83.3% patients, which was higher than our findings.⁹⁸ of whom 29 (58%) were females and 10 (20%) were males. A greater proportion of males (83.34% males vs. 76.32% females) were RA factor positive, however this was not statistically significant ($p=0.15$).

In our study, among the 28 patients who had pulmonary manifestations, 27 (96%) were RA factor positive whereas among the 22 patients without pulmonary manifestations 12 (56%) were RA factor positive. The difference was statistically significant ($p < 0.001$). A study done by Derkjen van Zeven et al. in 1986, patients with a positive RA factor test had more radiological abnormalities, more disease activity, worse functional ability, more extraarticular manifestations, and needed more treatment with second line drugs than patients with persistently negative or variably positive and negative test results during the follow up [12].

ACPA was done in all patients. Fourty seven (94%) were ACPA positive. This in concordance with study conducted by Matsui et al, in which 95% of study individuals were ACPA positive [13].

ESR was checked in all patients. Mean ESR was 48.12 ± 29.08 mm/hr (range 8 – 120). Elevated ESR was found in 40 (80%) of patients. In a study conducted by Prasad R et al on pleuropulmonary manifestations in rheumatoid arthritis, elevated ESR was seen in 58.8%, which is lower than the findings of our study [14]. Higher percentage of patients with elevated ESR in our study may be because many of the patients in our study were on a relatively short follow up at our institution & had active disease, as their treatment was still being optimized. Mean ESR was higher in patients with pulmonary manifestations than patients without pulmonary manifestations. However, the difference was not statistically significant ($p=0.121$).

CRP was tested in all patients. The Mean CRP was 5.09 ± 3.43 mg/dl (range 0.1 – 12) Elevated CRP was found in 39 (78%) of patients. In a study done by Suzanne Verstappen MM et al in 2012, elevated CRP was found in 74% patients, which was lower than the findings of our study but the mean CRP was 9.0 mg/dl (Range 3.6–17.0), which was higher than that documented in our study.¹⁰³ In a study done by Dimitrios A Pappas et al. in 2010 on respiratory symptoms and disease characteristics as predictors of pulmonary function abnormalities in patients with rheumatoid arthritis, patients with restriction had a significantly higher mean CRP.¹⁰⁴ In our study a mean higher CRP was found in the group with PFT abnormalities (5.78 ± 3.72 vs. 4.14 ± 2.79), but the

difference was not statistically significant ($p=0.146$), perhaps because of the small number of patients studied.

Conclusion

- Mean age of the patients in the study was $46.3 \pm 9.75.7$ years.
- The female to male ratio was 3.2:1.
- Mean duration of the disease was 5.18 ± 6.52 years (range 1-26 years)

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