

ORIGINAL RESEARCH

Analysis of Hematological Abnormalities associated with Rheumatoid Arthritis Patients at a Tertiary Care Centre

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ABSTRACT

Introduction: Rheumatoid arthritis (RA) is a systemic inflammatory disorder associated with significant proportion of haematological abnormalities. The present study was undertaken for assessing the haematological abnormalities among rheumatoid arthritis patients. The main aim of the study is to study the prevalence of haematological manifestations in patients with seropositive rheumatoid arthritis.

Materials and Methodology: A total of 135 Rheumatoid arthritis patients were enrolled in the present study. A self-framed questionnaire was prepared and a complete clinical and medical details of all the patients were recorded. All the patients were recalled in the morning and blood samples were obtained. All the blood samples were sent to laboratory for assessment of haematological profile. Statistical analysis was performed using SPSS version 16.0 software. All analyses were two-tailed and differences were considered statistically significant when $p < 0.05$.

Results: Out of 135 patients observed with rheumatoid arthritis, 104 (77.4%) were females and 31 (22.5%) males with age of 42.61 ± 8.59 years and 54.14 ± 6.38 years, respectively. The BMI levels in females was 25.52 ± 0.63 kg/m whereas in males was 23.1 ± 0.51 kg/m found significant ($p < 0.05$). Out of 135 patients, morning stiffness affected 18 (13.7%) males and 99 (73.5%) females. Joint swelling, joint pain and fatigue were common features.

Conclusion: To conclude, the most common type of haematological abnormality observed in rheumatoid arthritis is anaemia and the most common type is Iron deficiency anemia. The aetiology for this iron deficiency to happen is thought to be due to drug induced GI blood loss.

Keywords: Rheumatoid Arthritis, Haematological Manifestations, Anaemia, Iron Deficiency.

INTRODUCTION

The condition termed Rheumatoid Arthritis (RA) could be defined as a chronic systemic inflammatory disorder of unknown aetiology that might have the potential to affect majority of the tissues and organs but principally known to attack the joints symmetrically producing a non-suppurative proliferative and inflammatory synovitis. When observing the clinical course of this condition, vast majority of the patients might observe to exhibit a pattern of persistent and progressive disease activity that usually fades off in intensity over time. Rather in clinical practice, there is general acceptance that the inflammation caused by rheumatoid arthritis

should be controlled as soon as possible and that control should be maintained for as long as possible in equally consistent with patient safety.¹ When the goals of managing the rheumatoid arthritis condition, it is evident that the management of RA should also include systematic and regular quantitative evaluation of disease activity. Therefore, an eventually accurate, valid and reliable method for an effective assessment of disease activity is one of the most important problems for guiding the treatment protocol during management of the RA patients.

The reported extra-articular manifestations are all the conditions and symptoms which are not directly related to the locomotor system.^{2,3} Later epidemiologic studies pertaining to the extra-articular RA manifestations have emphasized their major role as predictors of premature mortality in patients with RA.^{3,4} Extra-articular RA is a serious & debilitating condition and rheumatoid arthritis patients with extra-articular manifestations should be aggressively treated first and monitored.⁴ Extra-articular manifestations of RA contributes in about 40% of patients, either in the beginning or during the course of their disease.⁵ Systemic features in RA are the most common and they are mostly related to vasculitis and often a reflection of chronic, longstanding inflammation. Most organs can be involved.^{6,7} These manifestations occur as very common in men as in women and might appear at any age. Many of these manifestations are related to the active and severe RA, so early and more aggressive RA drug therapies are being employed and although evidence from randomized studies is not available, this approach would seem appropriate in view of the adverse effect of extra-articular manifestations on RA outcomes.⁸ Patients affected with RA, who have high titres of rheumatoid factor i.e., auto antibodies to the Fc component of immunoglobulin G are most likely to have extra-articular manifestations of their disease, including rheumatoid nodules, rheumatoid vasculitis, and pleuropulmonary, neurologic, digestive, cardiovascular, cutaneous, hematologic, and ocular complications.⁹ The prevalence of extraarticular manifestations of RA has eventually declined in recent years, with the timing and pattern of the decline indicating that disease modifying RA treatments maybe changing the natural history of the disease. The main aim of the study is to study the prevalence of haematological manifestations in patients with seropositive rheumatoid arthritis.

MATERIALS AND METHODOLOGY

Present study was conducted in the Department of General Medicine, Rama Medical College Hospital and Research Centre, Hapur, Uttar Pradesh, India. It contained the evaluation of frequency of haematological abnormalities among rheumatoid arthritis patients. An informed written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 135 Rheumatoid arthritis patients were enrolled in the present study. A self-framed questionnaire was prepared and a complete clinical and medical details of all the patients were recorded. All the patients were recalled in the morning and blood samples were obtained. All the blood samples were sent to laboratory for assessment of haematological profile. Statistical analysis was performed using SPSS version 16.0 software. All analyses were two-tailed and differences were considered statistically significant when $p < 0.05$. For continuous variables, the mean and standard deviation were calculated; unpaired t-test was used to compare variance between groups of patients with low to moderate disease activity and patients with high disease activity.

RESULTS

Out of 135 patients observed with rheumatoid arthritis, 104(77.4%) were females and 31(22.5%) males with age of 42.61 ± 8.59 years and 54.14 ± 6.38 years, respectively. The BMI levels in females was 25.52 ± 0.63 kg/m whereas in males was 23.1 ± 0.51 kg/m found significant ($p < 0.05$). Laboratory findings are depicted in Table 1. Out of 135 patients,

morning stiffness affected 18(13.7%) males and 99 (73.5%) females. Joint swelling, joint pain and fatigue were common features (Table 2). And in table – 3 it has been showed that anaemia was found to be present in 42.94 percent of the patients. Thrombocytosis was found to be present in 18.99 percent of the patients while leucocytosis was found to be present in 8.28 percent of the patients.

Table 1: Clinical parameters of Rheumatoid Arthritis

Clinical parameters	Female (n=104)	Male (n=31)	P – value
Age (years)	42.61 ± 8.59	54.14 ± 6.38	<0.05
BMI (kg/m ²) (18.6 – 24.9)	25.52 ± 0.63	23.31 ± 0.51	<0.05
ESR (mm/hr) (0 -25)	64 ±2.9	61.4 ± 2.6	>0.05
Hg (gm/dL) Male = 14 – 17.5 Female = 12 – 16.1	11.9 ± 0.42	11.76 ± 0.43	>0.05
Rheumatoid factor (IU/mL)	15.3 ± 0.92	14.9 ± 0.82	>0.05
Anti CCP (IU/mL)	30.55 ± 2.1	17.53 ± 1.6	<0.05
SGPT (IU/mL)	91.2 ± 1.92	88.9 ± 1.33	>0.05

Table 2: Physical symptoms of Rheumatoid Arthritis

Clinical parameters	Positive	Male (n=31)	Female (n=104)
Morning stiffness	117 (87.4%)	26 (19.8%)	91 (67.5%)
Swelling	84 (62.2%)	18 (13.5%)	66 (48.6%)
Redness	61 (45%)	15 (10.8%)	46 (34.2%)
Joint pain	198 (80.2%)	21 (15.3%)	87 (64.8%)
Fatigue	119 (88.2%)	24 (18%)	95 (70.2%)
Lumps	72 (53.2%)	15 (10.8%)	57 (42.3%)

Table 3: Frequency of haematological abnormalities

Haematological abnormalities	Number	Percentage
Anemia	58	42.94
Leucocytosis	11	8.26
Thrombocytosis	26	19.99

DISCUSSION

Rheumatoid arthritis is identified as an inflammatory progressive disease with joint pain. In the present study, RA factor, Anti CCP and SGPT were greater in female when compared to males. RA had positive correlation with severity of an auto immune RA. Anti CCP is thought to be as predictive diagnostic tool in detection of RA at early stages. ESR levels can be increasingly influenced by, for instance, infections, malignancies, abnormally shaped or sized red blood cells or serum protein concentrations. They also tend to be higher in females than in males.^{10,11} In the present study (Table 1) levels of ESR in females was slightly higher than in males, as shown previously.¹² Anemia, defined by the World Health Organization as a haemoglobin concentration below 12 g/dl in women and 13 g/dl in men, is common in people with arthritis.

It was noted that Hb was significantly reduced in patients with high disease activity. In this study, the levels of haemoglobin were low normal in females and males respectively which directly revealed that both are at high risk of anemia. This could be attributed due to iron deficiency, which is an important cause of anemia in arthritis patients. Though not proven

enough, the upper GI complications were commonly associated with nonselective NSAID use, including ulceration, perforation and bleeding that could contribute to iron deficiency anemia in arthritis patients using some anti-cancerous drugs.¹⁴

In this study, anaemia was reported to be present in 42.94 percent of the patients. Thrombocytosis was found to be present in 18.99 percent of the patients while leucocytosis was found to be present in 8.26 percent of the patients. *Gawali PS et al* has effectively studied the clinical profile of rheumatic patients having infections including correlation of infection with various parameters and DMARDS and to study the incidence pattern of many infections. A total of 300 patients were studied out of which 50 were cases and the rest were control. Incidence of infection was high in extremes of age. The overall incidence rate of infection was slightly in higher side among females. Infection rate was 16.66%. Incidence of infection was highest among vasculitis group. Kidney was the most common organ involved. Incidence of infection was more in patients having anemia and leukopenia. Infection was more common at extremes of age and more common in females.¹⁵

CONCLUSION

To conclude, the most common type of haematological abnormality observed in rheumatoid arthritis is anaemia and the most common type is Iron deficiency anemia. The aetiology for this iron deficiency to happen is thought to be due to drug induced GI blood loss. Therefore, an early screening, diagnosis and appropriate management will promptly slowed the incidence and thus reducing the mortality associated with haematological manifestations with rheumatoid arthritis.

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