

ORIGINAL RESEARCH

HAEMATOLOGICAL ABNORMALITIES ASSOCIATED WITH RHEUMATOID ARTHRITIS PATIENTS

¹Ankush Kimmatkar, ²Olanrewaju Adeniran, ³Aishwarya Ashok Kimmatkar, ⁴Rasha Al-Hashimi, ⁵Ngumimi Peace Kpughur-tule, ⁶Sagimaie Somasundaram, ⁷Vivian Samuel Hana, ⁸Taha Sajjad

^{1,3}Medical student, Capital Medical University, Beijing, China

²MD, Lagos State University, Nigeria, Canada (Nigeria)

⁴Graduate, University of Baghdad College of Medicine, Baghdad, Iraq

⁵Medical Student, Saint James School of Medicine, Anguilla Island

⁶All Saints University, SVG, Canada

⁷Faculty of Medicine, Minia University, Egypt

⁸Medical Student/Physician Mountain Vista Medical Center, USA

Correspondence:

Ankush Kimmatkar

Medical student, Capital Medical University, Beijing, China

Email: ankushkimmatkar@outlook.com

ABSTRACT

Background: The present study was undertaken for assessing the haematological disorders among patients presenting with rheumatoid arthritis.

Materials & methods: 100 consecutive rheumatoid arthritis patients were enrolled. Only patients aged 18 years or more willing to participate in the study were included. Also; inclusion criteria included patients having joint pains, signs of inflammation, involving mono or polyarticular joints. A detailed history of the patient was taken and through clinical examination was done according to predesigned and pretested proforma. All patients were subjected to investigations like: Complete Haemogram, ESR, RBS, Blood Urea, Serum Creatinine, Electrocardiogram, Echocardiography and Radiography of Affected Joints. The descriptive and analytical statistics was done

Results: Anaemia was found to be present in 67 percent of the patients. Leucocytosis and thrombocytosis were found to be present in 21 percent and 33 percent of the patients respectively. Raised ESR and raised CRP were found to be present in 94 and 95 percent of the patients. Anti-CPP was found to be present in 100 percent of the patients.

Conclusion: Specific results may help to target patient education, increase physician awareness of the profile of the disease and suggest the need for social and rehabilitative services, and help monitor responses to therapy.

Key words: Rheumatoid arthritis, Haematological, Anaemia

INTRODUCTION

Rheumatoid arthritis (RA) is a systemic inflammatory disorder with the potential to cause destructive joint disease, significant disability, and increase mortality. It is a disease, where multiple joints in the body are affected, mainly joints of hands and feet. This leads to joint swelling, pain, stiffness, and possible loss of function.¹⁻³

When RA is left uncontrolled, the RA patient may experience joint deterioration, severe disability, decreased quality of life, the onset of comorbidities and premature mortality. The potential comorbidities include but are not limited to cardiovascular disease (CVD), cancer (specifically lymphoma and lymphoproliferative diseases, lung cancer and melanoma), infections, depression and gastrointestinal disease. In particular, CVD disproportionately affects RA patients. Identification of RA at initial presentation and treatment at earlier stage can affect disease course, prevent the development of joint erosions or retard progression of erosive disease. Early symptoms of RA may appear as vague pain with gradual appearance without classic symptoms of joint swelling or tenderness. These unusual symptoms are usually non-specific, and may persist for prolong period. Early articular manifestations of RA may be indistinguishable from other rheumatic diseases. Presence of some clinical features such as polyarthritis, symmetric arthritis, hand arthritis, pain upon squeezing the metacarpophalangeal or metatarsophalangeal joints, and morning stiffness greater than 30 minutes can be helpful not only in estimating the future course of arthritis but also in limiting the spectrum of differential diagnosis. Identification of all involved joints by precise clinical examination is essential. Counting the tender and swollen joints, and calculation of disease activity score are logical methods for the determination of disease severity and response to treatment.⁴⁻⁶ Hence; under the light of above-mentioned data, the present study was undertaken for assessing the haematological disorders among patients presenting with rheumatoid arthritis.

MATERIALS & METHODS

The present study was undertaken for assessing the haematological disorders among patients presenting with rheumatoid arthritis. 100 consecutive rheumatoid arthritis patients were enrolled. Only patients aged 18 years or more willing to participate in the study were included. Also; inclusion criteria included patients having joint pains, signs of inflammation, involving mono or polyarticular joints. A detailed history of the patient was taken and through clinical examination was done according to predesigned and pretested proforma. All patients were subjected to investigations like: Complete Haemogram, ESR, RBS, Blood Urea, Serum Creatinine, Electrocardiogram, Echocardiography and Radiography of Affected Joints. The descriptive and analytical statistics was done. All data were entered in Microsoft Excel and later analysed using statistical software. Results were expressed as mean \pm standard deviation and proportions. Chi-square test and unpaired t test were used for assessment of level of significance.

RESULTS

46 percent of the patients belonged to the age group of 31 to 40 years. Mean age (\pm SD) of the patients was 45.6 (\pm 14.58) years. 69 percent of the patients of the present study were females while the remaining were males. Mean weight and mean Hb was found to be 67.1 Kg and

9.25 gm% respectively. Mean ESR and Mean CRP was found to be 42.5 mm/hr and 22.7 mg/L respectively. Joint pain was the most common clinical manifestation of RA found to be present in 100 percent of the RA patients. Morning stiffness and joint swelling were found to be present in 79 percent and 68 percent of the patient population. Limitation of movements and deformity were found to be present in 70 percent and 33 percent of the RA patients. Fever was found to be present in 26 percent of the patients. Anaemia was found to be present in 67 percent of the patients. Leucocytosis and thrombocytosis were found to be present in 21 percent and 33 percent of the patients respectively. Raised ESR and raised CRP were found to be present in 94 and 95 percent of the patients. Anti-CPP was found to be present in 100 percent of the patients.

Table 1: Age-wise distribution of patients

Age group (years)	Number of patients	Percentage of patients
18 to 30	4	4
31 to 40	46	46
41 to 50	19	19
51 to 60	16	16
More than 60	15	15
Total	100	100

Table 2: Clinical profile of the patients

Clinical profile	Number of patients	Percentage
Fever	26	26
Joint pain	100	100
Joint swelling	68	68
Morning stiffness	79	79
Deformity	33	33
Limitation of movements	70	70

Table 3: Blood investigations

Blood investigations	Number of patients	Percentage of patients
Anaemia	67	67
Leucocytosis	21	21
Thrombocytosis	33	33
Raised ESR	94	94
Raised CRP	95	95
Anti-CPP	100	100

DISCUSSION

Rheumatoid arthritis (RA) is a chronic inflammatory disease of unknown etiology and complex multifactorial pathogenesis affecting joints and other tissues. Early RA is characterized by symmetric polyarthritis involving the small joints of the hands and feet with no radiologic changes. RA most frequently affects the metacarpophalangeal, proximal interphalangeal and wrist joints. Although any joint, including the cricoarytenoid joint, can be

affected, the distal interphalangeal, the sacroiliac and the lumbar spine joints are rarely involved, which is peculiar because these are some of the most typical targets of seronegative spondylarthropathies, such as psoriatic arthritis and ankylosing spondylitis. Simultaneous involvement of the same joint areas on both sides of the body should always be investigated even when it is not apparent. The clinical manifestations of RA vary, depending on the involved joints and the disease stage. The clinical features of synovitis are particularly apparent in the morning.⁶⁻¹⁰ Hence; under the light of above-mentioned data, the present study was undertaken for assessing the haematological disorders among patients presenting with rheumatoid arthritis.

46 percent of the patients belonged to the age group of 31 to 40 years. Mean age (\pm SD) of the patients was 45.6 (\pm 14.58) years. Anaemia was found to be present in 67 percent of the patients. Leucocytosis and thrombocytosis were found to be present in 21 percent and 33 percent of the patients respectively. Raised ESR and raised CRP were found to be present in 94 and 95 percent of the patients. Anti-CCP was found to be present in 100 percent of the patients. Our results were in concordance with the results obtained by previous authors who also reported similar findings. Gawali PS et al studied clinical profile of rheumatic patients having infections including correlation of infection with different parameters and DMARDS and to study incidence pattern of various infections. Incidence of infection was high in extremes of age. Overall incidence of infection was slightly higher in 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. Tuberculosis was the most common infection found in Rheumatic patients. Infection was more common at extremes of age and more common in females.¹¹

Our results were in concordance with the results obtained by Diggikar PM et al, who reported that 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%.¹² Diggikar PM et al observed that anti CCP is positive in 94% patient. Its diagnostic specificity approached 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.^{11, 12}

The most common haematological manifestation of RA is anaemia. This correlates with disease activity and acute-phase response. Patients can develop iron deficiency anaemia secondary to gastrointestinal blood loss from chronic non-steroidal antiinflammatory drug (NSAID) and glucocorticoid use. Vitamin B12 and folate deficiency can be a cause of anaemia in RA, especially with methotrexate. Thrombocytosis is part of the acute-phase response.¹³ In a study conducted by Kumar AAVS et al, anaemia was found in 69% of the population and 91.6% in the subset of patients of high disease activity, which is also similar to observational study carried out by Goyal et al. on 59 patients of RA in India which showed 67.8% of the patients had anaemia and 90% in the subset of patients of high disease activity. The cause of anemia in RA is mainly due to anemia of chronic disease caused by the

inflammatory mediators effecting hematopoiesis.²⁴ However in our country deficiency disorders also compound it.¹⁴⁻¹⁶

CONCLUSION

From the above results, the authors conclude that specific results may help to target patient education, increase physician awareness of the profile of the disease and suggest the need for social and rehabilitative services, and help monitor responses to therapy.

REFERENCES

1. Joshi VR. Arthritis in elderly. *J Indian Med Assoc.* 2003; 101:408–410
2. Chopra A, Patil J, Billempelly V, Relwani J, Tandle HS. Prevalence of rheumatoid diseases in rural population in Western India: a WHO-ILAR COPCORD study. *JAPI.* 2001; 49:240–246
3. Mijiyawa M. Epidemiology and seminology of rheumatoid arthritis in third world countries. *Revue Du Rhumatisme.* 1995; 62: 121–126
4. Carmona L, Villaverde V, Hernandez-Garcia C, Ballina J, Gabriel R, Laffon A. The prevalence of rheumatoid arthritis in the general population of Spain. *Rheumatology* 41:88–95.
5. Guo Q, Wang Y, Xu D, Nossent J, Pavlos NJ, Xu J. Rheumatoid arthritis: pathological mechanisms and modern pharmacologic therapies. *Bone Res.* 2018;6:15. Published 2018 Apr 27. doi:10.1038/s41413-018-0016-9
6. Heidari B. Rheumatoid Arthritis: Early diagnosis and treatment outcomes. *Caspian J Intern Med.* 2011;2(1):161–170.
7. Ropes MW, Bennett GA, Cobb S, Jacox R, Jessar RA: Proposed diagnostic criteria for rheumatoid arthritis. *Bull Rheum Dis* 7:121-124, 1956
8. Cobb S, Merchant WR, Warren JE: An epidemiologic look at the problem of classification in the field of arthritis. *J Chronic Dis* 250-54, 1955
9. Renuprasad, Sandeep. A study of clinical profile of patients with rheumatoid arthritis. *Medpulse- Research & Publication.* 2018; 5(2).
10. Menon NVB1, Peethambaran G1, Puthiyapurayil AT1, Nambudakath C1, Arakkal R1. Clinical profile and juvenile arthritis damage index in children with juvenile idiopathic arthritis: A study from a tertiary care center in south India. *Int J Rheum Dis.* 2018 Apr;21(4):871-879. doi: 10.1111/1756-185X.12886. Epub 2016 Jun 16.
11. Gawali PS, Gawali UP. Clinical profile of rheumatic patients with infectious complications. *Int J Adv Med* 2018;5:1163-7.
12. Diggikar PM, Gokhale VS, Satpathy PK, Baldania DD, Babu TV, Jain KD. A study on clinical profile of patients presenting with rheumatoid arthritis in a tertiary care hospital of Pune city. *National Journal of Medical Research.* 2016; 6(2): 146- 150.
13. Gulati M, Farah Z, Mouyis M. Clinical features of rheumatoid arthritis. *Medicine.* 2018; 46(4): 211-215
14. Kumar AVSA, Gupta K, Kartik S, Kumar SA. Clinical profile of rheumatoid arthritis patients reporting to a tertiary care center – data from Southwestern part of India. *International Journal of Contemporary Medical Research* 2019;6(6):F26-F32.

15. Goyal L, Shah PJ, Yadav RN, Saigal R, Agarwal A, et al. Anaemia in newly diagnosed patients of rheumatoid arthritis and its correlation with disease activity. *J Assoc Physicians India*. 2018; 66:26–9.
16. Papadaki HA, Kritikos HD, Valatas V, Boumpas DT, Eliopoulos GD. Anemia of chronic disease in rheumatoid arthritis is associated with increased apoptosis of bone marrow erythroid cells: improvement following anti-tumor necrosis factor- α antibody therapy. *Blood*. 2002;100:474-82