



RHEUMATIC MANIFESTATIONS IN HIV PATIENTS IN TERTIARY HOSPITAL

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ABSTRACT

Background: HIV infection is a common disease in India. Rheumatological manifestations (RM) are very common in HIV infected patients. Rheumatological manifestations are significant cause of morbidity in

these patients.

Aim & Objective: To study the clinical spectrum of rheumatic diseases in HIV positive patients and correlate the above with CD4+ counts.

Method & Materials: This study was a cross-sectional study carried out in Motilal Nehru Medical College and associated hospitals, Prayagraj. This study was carried out on 104 patients with HIV. After obtaining informed consent, demographic characteristics and details of the diagnosis of HIV will be ascertained. Patients with self-reported history of previous diagnosis of HIV and those on treatment with anti-retroviral agents will be consider to have HIV would need to have further testing of HIV. After this the patients will go through needed investigations to fulfill aims and objective of the study. Statistical analysis and interpretation of the data was done by using SPSS Software version 23.

Result: This study was carried out on 104 patients with HIV. The mean (SD) of age (Years) of participant in my study was 38.95 (8.93). The maximum number of participants was in age group of 31 -40 years that were 36.5% of total case. The 54.8% of the participants were Male and 45.2% were Female. Patients with rheumatic manifestation, 6 (5.8%) of the participants had Arthritis/Arthralgia and 1 (1.0%) of the participants had Septic Arthritis and 1 (1.0%) of the participants had Osteomyelitis and 1 (1.0%) of the participants had Avascular Necrosis. 0 (0.0%) of the participants had Systemic Lupus Erythematosus and 2 (1.9%) of the participants had Rheumatoid Arthritis and 0 (0.0%) of the participants had Psoriatic Arthritis.

Conclusion: The clinical spectrum of rheumatic disease in HIV patients was that, Arthritis/Arthralgia was most common rheumatic manifestation followed by Septic Arthritis and Osteomyelitis. Study showed that with increase in duration of ART regimen the incidence of rheumatic manifestation was decreases.

KEYWORDS : HIV, Rheumatic Manifestations, CD4 Count

INTRODUCTION

HIV infection is a global pandemic, with cases reported from virtually every country. At the end of 2016, an estimated 36.7 million individuals were living with HIV infection, according to the Joint United Nations Programmed on HIV/AIDS (UNAIDS). An estimated 95% of people living with HIV/AIDS reside in low- and middle-income countries; ~50% are female, and 2.1 million are children <15 Year. The estimated number of people living with HIV i.e., the global prevalence has increased more than fourfold since 1990, reflecting the combined effects of continued high rates of new HIV infections and the life-prolonging impact of antiretroviral therapy. In 2016, the global prevalence of HIV infection among people aged 15–49 years was 0.8%. In 2016, an estimated 1.8 million new cases of HIV infection occurred worldwide. ⁽¹⁾ India has HIV prevalence of 0.26% among adults with 75,948 new HIV infections occurring annually. There are 1, 50,000 people living with HIV in Uttar Pradesh. ⁽²⁾

METHOD AND MATERIAL

This is a descriptive study which includes 104 HIV-positive patients seen at Medicine and Orthopaedic department and ART clinic in SRN Hospital, Prayagraj from January 2021 to December 2021. Ethical committee clearance was obtained. Informed consent in the regional language (Hindi) as well as in English was obtained.

Case Selection:

Patients (male and female) attending Medicine department and ART clinic in SRN Hospital, Prayagraj. All HIV-positive patients (three successive reactive ELISA sera) above the age of 18 years with one or more rheumatic manifestations regardless of stage of disease in whom all clinical &

investigative information including CD4 counts were available.

Data Collection Method:

Detailed history including age, disease duration and detailed confidential questionnaire pertaining to sexual history (homosexual \ heterosexual), history of blood transfusion, family history, treatment with ART, and drug history were taken from each patient. A thorough general and systemic examination was done. Dermatological examination was done with respect to the morphology, distribution and any special features of the lesions. Oral mucosa, genital mucosa, nail and hair were also examined in detail. CD4 counts were recorded in all the patients. The patients were classified into stages according to WHO clinical and immunological staging system. All the data was recorded in a proforma, tabulated and analysed. Prevalence of each diagnosis was calculated. The mean (SD) CD4 count of each diagnosis was recorded (as mean \pm standard deviation). Data were analyzed by unpaired Student's 'T-test'. The Chi-square test was used to evaluate the significance between categorical groups. A P-value of less than 0.05 was considered significant.

RESULT:

Table: Association Between CD4 Count And Parameters

Parameters	CD4 Count	p value
Age (Years)***	Correlation Coefficient (rho) = -0.28	0.005 ¹
Gender***		0.021 ³
Male	262.71 \pm 72.23	
Female	307.54 \pm 98.43	
Rheumatic Disease: Any***		<0.001 ³

Parameters	CD4 Count	p value
Yes	210.00 ± 85.40	
No	292.09 ± 84.38	
Rheumatic Disease: Arthritis/Arthralgia ***		0.001 ³
Yes	185.67 ± 13.14	
No	289.39 ± 86.91	
Rheumatic Disease: Septic Arthritis		0.360 ³
Yes	201.00 ± 0	
No	284.20 ± 87.86	
Rheumatic Disease: Osteomyelitis		0.110 ³
Yes	173.00 ± 0	
No	284.48 ± 87.56	
Rheumatic Disease: Avascula Necrosis		0.360 ³
Yes	201.00 ± 0	
No	284.20 ± 87.86	
Rheumatic Disease: Systemic Lupus Erythematosus		-
Yes	-	
No	283.40 ± 87.82	
Rheumatic Disease: Psoriasis		0.134 ³
Yes	465.00 ± 0	
No	281.64 ± 86.38	
Rheumatic Disease: Rheumatoid Arthritis		0.953 ³
Yes	319.00 ± 206.48	
No	282.71 ± 86.12	
Rheumatic Disease: Polymyositis		-
Yes	-	
No	283.40 ± 87.82	
Rheumatic Disease: Scleroderma		-
Yes	-	
No	283.40 ± 87.82	
Rheumatic Disease: Psoriatic Arthritis		-
Yes	-	
No	283.40 ± 87.82	
Rheumatic Disease: Reactive Arthritis		-

Parameters	CD4 Count	p value
Yes	-	
No	283.40 ± 87.82	
Rheumatic Disease: Ankylosing Spondylitis		0.183 ³
Yes	184.00 ± 0	
No	284.37 ± 87.69	
Rheumatic Disease: Sjogren's Syndrome		-
Yes	276.67 ± 83.57-	
No	283.40 ± 87.82	
RA Factor		0.915 ³
Non-Reactive	283.25 ± 87.70	
Reactive	291.00 ± 131.52	
Anti-CCP (u/l)	Correlation Coefficient (rho) = -0.15	0.122 ¹
S.Uric Acid (mg/dl)***	Correlation Coefficient (rho) = -0.2	0.041 ¹

X-Ray Of Bilateral Wrist Joint And Hand (WNL)	283.4 ± 87.82	-
X-Ray Of LS Spine (WNL)	283.4 ± 87.82	-

***Significant at p<0.05, 1: Spearman Correlation, 2: Kruskal Wallis Test, 3: Wilcoxon-Mann-Whitney U Test

The following variables were significantly associated (p<0.05) with the variable 'CD4 Count': , Age (Years), Age, Gender, Rheumatic Disease: Any, Rheumatic Disease: Arthritis/Arthralgia , S.Uric Acid (mg/dl), Duration Of ART Regimen

DISCUSSION:

HIV is the etiologic agent of AIDS it belongs to the family of human retroviruses (Retroviridae) and the subfamily of lentiviruses. Rheumatologic disorders are common in patients with HIV infection and range from excessive immediate-type hypersensitivity reactions to an increase in the incidence of reactive arthritis to conditions characterized by a diffuse infiltrative lymphocytosis. The occurrence of these phenomena is an apparent paradox in the setting of the profound immunodeficiency and Immuno-suppression that characterizes HIV infection and reflects the complex nature of the immune system and its regulatory mechanisms.

The mean (SD) of CD4 Count in HIV patients with rheumatic manifestation in my this was 283.12 (86.46). The CD4 Count ranged was from 148 – 545. *Renu Saigal et al.*⁽⁹⁾ study showed that the mean CD4 + cells were also significantly lower in patients with Rheumatic manifestation (RM) as compared to patients without RM (p < 0.05). *M Kaddu-Mukasa et al.*⁽⁶⁾ study showed that, the mean CD4+ count was 171 cells mm³ , So all of above study showed that the mean of CD4 count was lower in HIV patients with rheumatic manifestation than without Rheumatic manifestation and the risk of rheumatic manifestation was increases as the CD4 count decreases. Study showed that for every 1 unit increase in age (Years), the CD4 count decreases by 3.05 units. Conversely, for every one unit increased in CD4 Count, the Age (Years) decreased by 0.03 units. The mean (SD) of CD4 Count in the age 21-30 Years group was 315.75 (107.70) and in 31-40 years was 301.66 (81.36) and in 41-50 Years was 246.00 (65.17) and in 51-60 Years was 246.50 (61.61) and in 61-70 Years group was 314.00 (NA). There was a significant difference between the 5 groups in terms of CD4 Count ($\chi^2 = 10.906$, p = 0.028), with the median CD4 Count being highest in the Age: 61-70 Years group. This showed that as the age increases the severity of HIV increases and risk of rheumatic manifestation increases.

The mean (SD) of CD4 Count in the Rheumatic Arthritis/ Arthralgia group was 186.83 (12.29) and in absent Rheumatic Arthritis/Arthralgia was 289.02 (85.56). There was a significant difference between the 2 groups in terms of CD4 Count (W = 59.500, p = 0.001), with the median CD4 Count being highest in the absent Rheumatic Arthritis/Arthralgia. The mean (SD) of CD4 Count in the Septic Arthritis group was 175.00 (NA) and in absent Rheumatic Septic Arthritis was 284.17 (86.21). There was no significant difference between the groups in terms of CD4 Count (W = 6.500 , p = 0.138). The mean (SD) of CD4 Count in the Rheumatic Osteomyelitis group was 226.00 (NA) and in the No Osteomyelitis group was 283.68 (86.70). The mean (SD) of CD4 Count in Avascular Necrosis was 209.00 (NA) and in no Avascular Necrosis group was 283.84 (86.57). There was no significant difference between the groups in terms of CD4 Count (W = 28.000, p = 0.444). The mean (SD) of CD4 Count in the Rheumatoid Arthritis group was 287.50 (161.93) and in the No Rheumatoid Arthritis was 283.04 (85.81). There was no significant difference between the groups in terms of CD4 Count (W = 97.500, p = 0.925). *Abdul Aziz Umar et al*⁽⁷⁾ study showed that the mean CD4 count in HIV patients diagnosed with rheumatologic diseases was 279.1±177.6

cells/ μ L, whereas the mean CD4 count in HIV positives without rheumatological disease was 345.2 ± 211.8 cells/ μ L. The mean CD4 count in HIV-positive patients with rheumatologic disease was significantly lower than that of HIV-positive patient without rheumatologic disease ($t = -2.24, P = 0.027$). The mean CD4 count in HIV patients with infective rheumatologic disease tend to be lower than the mean CD4 count of HIV patients with non-infective (inflammatory) rheumatic diseases. HIV-positive patients with infective rheumatological disease generally had mean CD4 count below 200 cells/ μ L, whereas those with inflammatory non-infective rheumatologic disease had CD4 count above 200 cells/ μ L. The prevalence of rheumatologic diseases was noted to increase with fall in CD4 count. Moreover, there was a statistically significant difference in the prevalence of rheumatologic disease in the different CD4 groups, $X^2 = 8.8, P = 0.012$. Independent predictors of rheumatic disease showed that factors predictive of rheumatological manifestation in HIV patients were HIV stage ($P = 0.047$) and CD4 T-lymphocyte count ($P = 0.049$). Most of above study favored my study that CD4 count in HIV patients with rheumatic manifestation was lower than HIV patients with non rheumatic manifestation.

There was a weak negative correlation between Anti-CCP (u/l) and CD4 Count, and this correlation was statistically significant ($\rho = -0.23, p = 0.021$). For every 1 unit increase in Anti-CCP (u/l), the CD4 Count decreases by 0.18 units. Conversely, for every 1 unit increase in CD4 Count, the Anti-CCP (u/l) decreases by 0.00 units. **M Kaddu-Mukasa et al.**⁽⁶⁾ study showed that, all patients had a negative anti-nuclear antibody test, with only two having a positive rheumatoid factor test. The mean ESR was raised at 41.4 ± 40.8 mm/hr, mean hemoglobin was normal 15.1 ± 0.99 g/dl. Mean CD4 T-cell count was 278.6 ± 12.23 /mm³ and uric acid 0.33 ± 0.03 mg/dl. Rheumatoid factor was positive in two (2) patients and the anti-nuclear antibodies were negative in all study patients.

In the clinical spectrum of rheumatic disease in HIV patients was that, Arthritis/Arthralgia was most common rheumatic manifestation followed by Septic Arthritis and Osteomyelitis. CD4 Count in HIV patients with rheumatic manifestation was 283.12 (86.46). This was significantly lower than HIV patients with no rheumatic manifestation, and showed that decreased in CD4 count increase the incidence of rheumatic manifestation. CD4 Count in the Rheumatic Arthritis/Arthralgia group was significantly lower than in absent Rheumatic Arthritis/Arthralgia. CD4 Count in the Septic Arthritis group was significantly lower than in absent Rheumatic Septic Arthritis.

CD4 Count in the Rheumatic Osteomyelitis group was significantly lower than in the No Osteomyelitis group.

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