Original Research Paper

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Rheumatology

RHEUMATIC MANIFESTATION IN HIV PATIENT AND EFFECT OF ART ON IT: SINGLE CENTRED STUDY

Reena Sachan Assistant Professor In Microbiology Department, MLNMC Prayagraj.

Vivek Seth Junior Resident In Medicine Department, MLNMC Prayagraj.

Smriti Singh* Associate Professor Medicine Department MLNMC Prayagraj. *Corresponding Author

ABSTRACT **Background** HIV (Human Immunodeficiency Virus) infection has now become a chronic illness due to antiretroviral therapy (ART). The prevalence of rheumatic manifestations with disease has been gradual rises. **Aim and Objective:** Aim of this study was to Find the relation between the rheumatic manifestations and ART drug regimens.**Material and methods:** This was a cross sectional study carried out on 104 patients of either sex with HIV confirm status attending a tertiary care hospital (Motilal Nehru Medical College and associated hospital). During the study period (June 2020 to August 2021) patients were assessed by clinical examination and with relevant laboratory investigation, to diagnose the rheumatological manifestation, & detailed history of ART therapy and duration of ART therapy.**Result:** Out of 104 HIV patients 54.8% of the participants were male and 45.2% were male most common rheumatic manifestation was arthritis (65.8%). The mean SD of CD4 count in HIV patients with rheumatic manifestation was 283.12(86.46). This was significantly lower than HIV patients with no rheumatic manifestation, showed that lower CD4 count increase the incidence of Rheumatic manifestation. Rheumatic manifestation was more in those patients who were on longer duration of ART. There was no significant difference between ZLN group and TLN group in terms of distribution of rheumatic disease.

KEYWORDS :

Introduction

Human immunodeficiency virus (HIV) is a cytopathic retrovirus and causes a chronic viral infection (AIDS), it is an immunosuppressive state of the host due to depletion of the CD4+T cell count [1]. Globally, 37.9 million people were reported to have HIV up to the end of 2020.The total number of people living with HIV (PLHIV) in India was estimated at 23.19 lakh in 2020[2]. Pre HAART era the prevalence of rheumatic manifestations among HIV infected patient was 3 to 71% [3]. This study was conducted to find the relationship in between the rheumatic manifestation in ART drug regime and its duration in HIV patients.

Method and material

This is a Cross sectional study which included 104 for HIV positive patient seen in medicine department and ART clinic in SRN hospital Prayagraj from January 2021 to December 2021. Ethical committee clearance was obtained. Informed consent was obtained.

Case selection

All HIV Patients (male and female) above the age of 18 year, attending Medicine department and ART clinic in SRN hospital Prayagraj; with one or 2 more rheumatic manifestations regardless of stage of disease in whom all clinical and investigative information including recent CD 4 count were available.

Data collection method

Detailed history which included age, sex, disease duration and detail confidential questionnaire pertaining to sexual history, blood transfusion history, family history, treatment with ART and drug history were taken from each patient. A thorough general and systemic examination was done. Recent CD 4 count were recorded in all the patients. The patient were classified into stages according to WHO clinical immunological staging system. All the data that was recorded, tabulated and analysed. Prevalence of each diagnosis was calculated. The mean standard deviation CD 4 count of each diagnosis was calculated. Data were analysed by unpaired student's 'T- test'. The chi square test was used to evaluate the significance between the categorical groups. A P- value of less than 0.05 was considered significant.

Result

The mean age (years) was 38.20±9.63. The 56 (53.8%) of the participants were male and 48 (46.2%) females. Patients with rheumatic manifestations; 6 (5.8%) of the participants had arthritis/ arthralgia, 1(1%) of the participants had septic arthritis, 1(1%) of the participants had osteomyelitis, 1(1%) of the participants had avascular necrosis and 2(1.9%) of the participant had rheumatic arthritis.

Table: 1 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 ± 72.23	
Female	307.54 ± 98.43	
Rheumatic Disease: Any***		<0.001 3
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: Avascular 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	-
ART Regimen		0.683 [3]
TLE	284.23± 93.96	
ZLN	280.76± 68.84	
Duration Of ART Regimen***	Correlation Coefficient (rho) = -0.23	0.018 [1]

***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 variable CD 4 count, Age, Gender, Rheumatic disease, uric acid mg/dl, duration of ART regimen.

Discussion

42(40.38%) patient had disease duration of 0-3 year, 39(37.5%) had disease duration of 4-7 year in 39 (37.5%) and the rest had more than 5 year. There was a weak negative correlation between age and CD 4 count & the correlation was statistically significant (rho= -0.29, p= 0.003). For every 1 unit increase in age the CD 4 count decreases by 3.05 units. Conversely for every 1 unit increase in CD4 count the age decreases by 0.03 unit. It also showed that as the age increases the severity of HIV infection increases and risk of rheumatic manifestation also increases. This study is supported by Parperis et al where HIV patient without rheumatic disease compared with HIV patient with rheumatic disease were older(mean age of 48.9 vs 42.7 years; p< 0.01) and had a longer duration of HIV infected infection (mean duration of 15.5 vs 10.3 years; p< 0.01)[4].

The mean SD of CD 4 count in HIV patients with rheumatic manifestation in this study was 283.12(86.46). The CD 4 count range from 148- 545. Renu Saigal et al and M Kaddu et al study showed that, the mean of the CD 4 count was lower in HIV patient with rheumatic manifestation then without rheumatic manifestation and risk of rheumatic manifestations was increases as the CD 4 count decreases [5,6]. But Parperis et al study showed that the CD 4 count & viral load levels were not associated with higher risk of rheumatic disease [4].

The mean (SD) of CD 4 count in the ART regimen TLE group was 28 4.23 (93.96) and in ZLN group was 284.76 (68.84). There was no significant difference between the group in term of CD 4 count (W= 1126 0.0, P= 0.753). AbdulAzizUmar et all study showed that the mean CD 4 count of ARV naiive patient was 27 271±115.7 cells/µL, and the mean CD 4 count among an ARV experience patient was 381.7±229.9 cells/µL. The mean CD 4 count of patient on ARV was significantly higher than the then of ARV naive patient (t=3.93, p=0.000) [7]. Ritikasingla et all study showed that the mean baseline CD4 count of patient in ZLN group was 223.51±111.21 cell/mm3. After one year of therapy, the CD 4 count increases from the mean baseline value to statistically significant mean value of 415.37± 218.16 cell/mm3 (p<0.0001; 95% CI (160.59 - 223.11). One year of therapy with TLE regimen increased the CD 4 count from the mean baseline of 255.05 ±164.50 cells/mm3 to a mean value of 433 0.12±247.66 cell/mm3[8]. So, all the above study favoured our study that CD 4 count was not significantly difference between ZLN and TLE group.

There was a weak negative correlation between duration of ART regimen and CD 4 account, and this correlation was statistically significant (rho= -0.23, p= 0.018).

The mean SD of ART regimen duration of rheumatic disease patient was 6.36(2.87) and patients with no rheumatic disease was 4.33(2.57). There was a significant difference between the 2 group in term of duration of ART regimen (W= 728.00, P= 0.021), with median duration of ART regimen being highest in the rheumatic disease. But in PK Yadav et all study showed that ART has reduced rates of rheumatic manifestations like inflammatory arthritis and connective tissue disease in patients with HIV infection [9]. Several prospective studies have shown that prevalence of rheumatic manifestations associated to HIV infection has significantly declined in the HAART era, but a new group of rheumatic disorders has emerged covering the spectrum of systemic autoimmune and autoinflammatory disease [10]; might be the reason in our study with increase in duration of ART, rheumatic manifestations increase. This was supported by Maganti RM et al study showed that the prevalence of rheumatic manifestations might have been more among patients who received HAAART (highly active antiretroviral therapy) and experience significant CD4 increase and immune reactivation [11]. Another reason was that as the duration of diseases increases patients might stopped ART treatment, whenever they feel symptomatic better and they revisit to clinic after few times when they were symptomatic, this was the limitation of our study.

There was no significant difference between the ZLN group and TLE group in terms of distribution of rheumatic disease: arthritis/arthralgia, septic arthritis, osteomyelitis and avascular necrosis.

Conclusion

Incidence of rheumatic manifestation in HIV patients was more common in male than female. Most common rheumatic manifestation was arthritis/arthralgia. CD4 count in HIV patients with rheumatic manifestation was lower than HIV patients with no rheumatic manifestation. There was no significant difference between ZLN and TLE group in term of distribution of rheumatic disease. With increase in duration of ART regimen the incidence of rheumatic manifestation was increases.

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