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Comparing the clinical profile of HIV patients with the duration of the disease: a prospective study from single centre

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Abstract
Background: Human immunodeficiency virus (HIV) has infected several million individuals in India. Various interventions have been implemented for early detection and prevention of transmission of HIV infection.
Aims and Objectives: To study the clinical profile of HIV infection and compare it with the duration of disease.
Materials and Methods: Hundred HIV patients were studied at JA Groups of Hospitals, G.R.M.C Gwalior, Department of Medicine from November 2016 to August 2018.Patients were divided based on the duration of the disease as Group A (≤2 years), Group B (2-5 years) and Group C (>5 years). Different groups were compared with the clinical profile of HIV patients. Detailed sociodemographic profile along with CD4 count was done. Patients were also classified according to WHO classification stages.
Results: Majority of the patients were in the age group of 31-40 years (39%). Male preponderance was recorded (66%). Most common occupation was housewife (33%). Majority of the patients were at high risk sexual behavior (48%) and had duration of therapy of 2-5 years (55%). Among the Group B patients majority were male had primary education, were drivers, belong to urban area, majority had CD4 count of 200-400, and had WHO grading of 1.
Conclusion: Early detection is the key to prevent the further spread of the disease. Duration of disease between 2-5 years had significant impact on male patients who had primary education only and had lower quality of life as majorities were drivers. The signs and symptoms strongly associated with HIV infection can be used for vigilance and early detection of HIV.

Keywords: cardiovascular disease, HIV infection, CD4 count

Introduction

National AIDS Control Organization of India reported a prevalence of 0.26% in the year 2015 [1]. National AIDS Control Organization has estimated a population of 2.11 milion who are living with human immunodeficiency virus (HIV)/ acquired immunodeficiency (AIDS) in India [2, 3].

In Indian population with symptoms suggesting for HIV; testing is done as a voluntary test [4]. In order to prevent the spread of HIV, its testing is also a part of screening procedure in antenatal clinics.HIV testing is also performed in the patients with tuberculosis (TB) as previous studies have found a significant association between these two [5].

Despite of having several stages for HIV testing, majority of the patients became aware after they were found to be positive for HIV in late stages [6, 7]. This is due to lack of awareness about HIV/ AIDS in individuals with high risk behaviors such as men having sex with men, sex workers, and injecting drug users.

Duration of disease may put the patients in devastating condition. We aimed to diagnose the patients early for HIV infection which facilitates better care, ameliorates clinical outcomes and improves strategies by healthcare delivery systems [8]. In present study we tried to evaluate the sociodemographic and clinical profile of HIV patients among different groups divided based on the duration of disease.

Materials and Methods

A prospective cross-sectional study was performed on 100 patients at JA Groups of Hospitals, G.R.M.C Gwalior, Department of Medicine from November 2016 to August 2018

All cases were subjected to detailed clinical evaluation, including presenting symptomatology, duration of illness, history of exposure, opportunistic infections, co-morbid conditions, treatment and addiction history and family history, clinical examination, anthropometric measurements, routine investigations (Hemogram, LFT, RFT, Lipid Profile, Ultrasonography, PT-INR, Blood sugar level, Serum Albumin).

After a detailed sociodemographic profile, CD4 count was also done for all patients. Severity of illness was assessed on the basis of WHO classification stages and CD4 count.

Individuals of either gender above 18 years of age, diagnosed as having HIV/AIDS from ICTC, Department of Microbiology, G.R. Medical College, Gwalior and registered in ART Centre were included.

Individuals of less than 18 yrs of age and more than 70 years of age, old cardiovascular disease, systemic illness resulting in cardiovascular disorder, acute cases such as poisoning, etc, endocrine disorders, history of drug intake and patients with chronic illness and autoimmune disease like TB, RA, SLE, COPD, CKD etc were excluded.

Patients were divided based on the duration of the disease as Group A (≤2 years), Group B (2-5 years) and Group C (>5 years). Different groups were compared with the clinical profile of HIV patients.

All the data analysis was done using IBM SPSS ver. 20 Software. Cross tabulation and frequency distribution was used to prepare tables. Microsoft office 2010 was used to prepare the graphs. Paired sample t test and one way ANOVA was used to compare the mean where as categorical data was compare using Chi square test. Level of significance was assessed at 5%.

Results

Majority of the patients were in the age group of 31-40 years (39%) followed by 41-50 years (32%) and 21-30 years (21%).Majority of the patients were male (66%).Most common occupation of study cohort was housewife (33%) followed by govt. service (18%).Majority of the patients were from the urban area (66%).Majority of the patients were having high risk sexual behavior (48%) followed by spouse of HIV infected person (33%).

Majority of the patients had duration of therapy of 2-5 years (55%) followed by 29% patients who had duration of therapy of >5 years.

Among Group A majority of the males had primary education whereas majority of the female had primary education. Majority of the males and female in Group B had more than primary education similarly among group C, majority of the patients had education more than primary. Majority of the males and female were from the URBAN area in all the groups.

Table 1: Showing occupation wise distribution of cases

Occupation	A		B		C	
	Male	Female	Male	Female	Male	Female
Driver	3	0	10	0	2	0
Self-employed	2	1	10	0	3	0
Housewife	0	2	1	16	0	14
Labor	2	0	0	0	1	0
Student	1	1	1	0	3	0
Farmer	1	0	5	0	0	0
Gov. servant	3	0	11	0	4	0
Worker	0	0	1	0	1	0
Health worker	0	0	0	0	1	0
Total	12	4	39	16	15	14

Majority of the patents of group B had WHO grading of 1 and among group B, maximum males had WHO grade 1.Majority of the patients had WHO grade 1 (49%) followed by grade 3 (35%) and grade 2 (14%).Majority of the patents had CD4 count of <200 (46%) followed by 200-400 (40%).

Table 2: Comparing Age Group with Duration of Therapy

	Age groups	A		B		C	
		Male	Female	Male	Female	Male	Female
Age (years)	< 20	0	0	0	0	1	0
	21-29	2	1	5	2	2	1
	30-39	4	3	12	12	5	6
	40-49	6	0	15	2	5	6
	50-59	0	0	6	0	2	0
	>59	0	0	1	0	0	1
CD4 count	<200	9	4	14	7	3	9
	200-400	3	0	20	8	6	3
	400-600	0	0	4	0	6	2
	>600	0	0	1	1	0	0

Table 3: Comparison ofCd4 Count at 1st Time of Presentation/Diagnosis with Duration of Therapy

CD4 count	A		B		C		Total
	Male	Female	Male	Female	Male	Female	
less than 50	1	0	0	0	0	0	1
50 to 150	7	4	11	6	2	8	38
150 to 250	3	0	9	6	4	4	26
250 to 350	1	0	13	1	3	0	18
350 to 450	0	0	5	2	3	1	11
450 to 550	0	0	0	0	3	1	4
550 to 650	0	0	1	0	0	0	1
650 to 750	0	0	0	0	0	0	0
750 to 850	0	0	0	1	0	0	1
Total	12	4	39	16	15	14	100

Leukocytosis was reported in 17% and leucopenia in 6% patients. Deranged lipid profile was noted in 27% patients. Majority of the patients had moderate anemia (40%) followed by mild anemia (39%). 13% had severe anemia.

Deranged blood glucose was reported in 17 patients, and 9 patients has CD4 count >200 and 8 had<200 CD4 count.
Deranged lipid profile was reported in 27 patients, and of that 21 had duration of disease of >5 years. Out of 17 leukocytosis patients, 7 had <200 CD4 count and out of 6 leucopenia patients all 6 had <200 CD4 count. Out of 40 moderate anemia patients, 15 had abnormal CD4 count and out of 39 mild anemia patients 21 had abnormal CD4 count. Out of total 40 moderate anemia patients majority belong to group B and of that majority are male patient. Out of total 39 mild anemia patients majority belong to group B and of that majority were male patient.

Discussion

Longer duration of HIV infection can results in severe cardiac manifestation. Patients with HIV infections have been shown to have an increased risk of coronary artery disease, and the most likely mechanism is endothelial dysfunction. Other underlying causes may be abnormal lipid metabolism, lipodystrophy syndrome, insulin resistance, and impaired glucose metabolism.
Majority of the patients were in the age group of 31-40 years (39%). This is similar to NACO report in which 89% were in the age group of 15-49 years and 7% were above 50 years and was also comparable with the age distribution in another large study done in India by Kumaraswamy *et al*. [7, 9, 10]. In a similar report by Gaikwad *et al*, 96% of the patients were in the age group of 19-49 years and only 4% were above 50 years of age [11].
In present study majority of the patients were male (66%). The gender difference was in accordance with NACO report, where 39% of the total HIV patients in India were females, 3.5% were children and the rest 57.5% were males.[4] Reports of Gaikwad *et al* including 150 patients showed that males were more affected than females by a ratio of 1.4:1 and about 86 (57.3%) were males and 64 (42.7%) were females [11].
In present study majority of the patients were at high risk sexual behavior (48%) followed by spouse of HIV infected person (33%). Hence sexual contact was the most common mode of transmission with heterosexuality being the cause for most of them and our data is comparable with NACO annual report 2009-10 where heterosexual route of transmission was the most common route [12].
Majority of the patients had duration of therapy of 2-5 years (55%) followed by 29% patients who had duration of therapy of >5 years. Among Group A (duration of therapy < 2 year) majority of the males and females had primary education. Majority of the males and female in Group B (duration of therapy 2-5 year) had more than primary education similarly among group C (duration of therapy> 5 year), majority of the patients had education more than primary. In present study majority of the patients of group B had WHO grading of 1 and among group B, maximum males had WHO grade 1. In present study majority of the patients had grade 1 (49%) WHO grading followed by grade 3 (35%) and grade 2 (14%). Gaikwad *et al* reported that the maximum number of patients studied were in clinical stage 2 (48.0%) followed by clinical stage 3 (38.0%), clinical stage 4 (8.7%) and only 5.3% of cases were in Stage 1 respectively of WHO grading [11]. While in study conducted by Singh *et al* most patients studied belonged to stage 3(45%) and stage 4(35.7%) categorized under WHO revised criteria [13, 14]. This difference in observation was because in our study we recruited patients both following up in the out-patient department as well as admitted patients while in the above mentioned study most of the patients were admitted patients and presented only in the advanced stages of the disease at the time of diagnosis.
In present study majority of the patents had CD4 count of <200 (46%) followed by 200-400 (40%). Gaikwad *et al* reported that CD4 count was less than 50/microL in 5.3%, 35.3% of cases had CD4 count between 50 to 199/microL, 42.0% had CD4 count between 200-499/microL while 17.3% had CD4 count ≥ 500 [11]. Marwadi *et al* evaluated the cardiac manifestations, pattern of cardiac involvement and its correlation with CD4+T cell count in HIV/AIDS cases and reported that out of 100 cases 33% were having CD4+Tcell count more than 200cells/mm3 while in 9%cases CD4+Tcell count was less than 50cells/mm3 [15]. Shrinivas *et al* noticed that out of 50 patients studied, 16 patients (32%) had CD4+T cell counts more than 200 cells/mm3, 6 patients (12%) had CD4+T cell count less than 50 cells/mm3 [16].
Leukocytosis was reported in 17% and leucopenia in 6% patients. Deranged lipid profile was noted in 27% patients. Majority of the patients had moderate anemia (40%) followed by mild anemia (39%). 13% had severe anemia. Deranged blood glucose was reported in 17 patients, and of that 8 had abnormal CD4 count. Deranged lipid profile was reported in 27 patients, and of that 21 had duration of disease of>5 years. Similar reports were depicted in the study done by Girardi *et al* who reported that a substantial proportion of HIV-infected individuals do not present for HIV testing until late in infection; these individuals are often ill, have a high mortality risk, and are less likely to respond to treatment when initiated [17].
Out of 17 leukocytosis patients, 7 had abnormal CD4 count and out of 6 leucopenia patients all 6 had abnormal CD4 count. Out of 40 moderate anemia patients, 15 had abnormal CD4 count and out of 39 mild anemia patients 21 had abnormal CD4 count. A similar study done by Pandey *et al* CD4 count significantly different among different grades of anemia [18]. Our results provide an overview of clinical profile of HIV-infected patients and association with different groups of disease duration. Present study has few limitations. First cross sectional nature of the present study was the main limitation which restricts the use of present study findings to large population. Second is the small sample size; a large randomize clinical trial is required to strengthen the present study findings.

Conclusion

Based on the results we conclude that signs and symptoms strongly associated patients with HIV and can be used for vigilance and early detection of HIV. HIV was more prevalent among the patients who were in third to fourth decade of their life and male patients. Patients should be catch up during the 2- 5 years of duration in order to prevent to more severe pattern.

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