HIV/AIDS PATIENTS' CLINICAL PROFILE AND IMMUNOLOGICAL RESPONSE TO ART IN A FOLLOW-UP STUDY IN MADHYA PRADESH, INDIA

General Medicine

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ABSTRACT

Introduction: National adult HIV prevalence in India is estimated at 0.26% and total number of people living with HIV in India is estimated at 21.17 lakhs in 2015. The signs and symptoms associated with HIV infection are useful for early detection of HIV. CD4 cell count is important measures of the efficacy of ART and subsequent immunological response.

Objectives: To know various symptoms/diseases and immune response to antiretroviral therapy.

Materials and Methods: This was a follow up study on the HIV/AIDS patients coming to ART centre in medical college. Data related to history, clinical examination and investigation were recorded including CD4 count on follow up visits and analyzed.

Results: 42% of HIV/AIDS patients were less than 40 years of age and 71% were males. Weight loss was most common (73%) associated symptoms/signs and tuberculosis was present in 30% cases. On applying repeated measure ANOVA test significant (p < 0.001) improvement was seen in CD4 count after starting Anti Retroviral therapy (ART).

Conclusion: Young adult males are prime victims of HIV/AIDS with associated tuberculosis in almost one third cases. Significant improvement was seen in CD4 cells count on starting Anti Retroviral therapy indicates improved immunity.

KEYWORDS

HIV/AIDS, Symptoms, CD4 Count, Immunity

Introduction

As per the India HIV Estimation 2015 report, National adult (15–49 years) HIV prevalence in India is estimated at 0.26% and total number of people living with HIV (PLHIV) in India is estimated at 21.17 lakhs in 2015. Various efforts have been taken for prevention of transmission and early detection of HIV for early management. Human immunodeficiency virus (HIV) test is performed as a voluntary test or as a diagnostic procedure in symptomatic individuals[1]. Many infected individuals became aware of their status only after they developed opportunistic infections in the late stages[2,3]. A person diagnosed and counseled for HIV infection avoids high risk behaviour which is beneficial to the society by limiting the transmission of the virus[4].

The signs and symptoms associated with HIV infection are useful for early detection of HIV. There is a significant occurrence of tuberculosis and oral candidiasis in HIV infected patients. Antiretroviral therapy (ART) has dramatically and consistently reduced HIV-associated morbidity and mortality among patients in both developed and developing countries[5-9]. Early initiation of ART and higher CD4 cell counts, are the predictors of virological success after treatment[10], prevents disease progression and prevents HIV transmission to sexual partners[11]. CD4 cell count and HIV RNA viral load are important measures of the efficacy of ART. Several studies have reported good improvement in CD4 cell counts following ART[12-15]. CD4 count in the beginning of ART treatment, is an important determinant of the immunological and virological response and subsequent risk of morbidity and mortality[16-21].

HIV/AIDS associated symptoms and diseases are important for identifying and diagnosing this infection and immune response play important role in future morbidity and mortality. Therefore present study was undertaken to know various symptoms/diseases associated with HIV/AIDS and to know the immune response to antiretroviral therapy.

Materials and Methods:

This follow-up study involved individuals who had come to ART centre at medical college from January 2008 to December 2009. The individuals attending ART centre were confirmed HIV positive cases sent by integrated counseling and testing centre (ICTC) and included all those who had voluntarily come to the clinic, as well as those referred by their physicians, other health care institutes. All HIV/AIDS cases coming to the clinic were initially counseled about HIV infection. Cases eligible for antiretroviral therapy (ART) were provided ART medicines. Total hundred cases fitting in the inclusion criteria were enrolled in the study. Symptomatic treatment was given to all the patients who had symptoms. The CD4 cell count was done initially and on follow ups. Data required were extracted from the questionnaires filled after attending the patients properly including history taking, clinical examination and investigation required according to protocol. Patient identification numbers were used to identify each case and all test reports were obtained from the records after linking the data.

The data were recorded in computer Microsoft excel spreadsheet and statistical analysis was done by using appropriate tests among various variables. A P-value of < 0.05 was considered to declare the difference as significant. Confidentiality of the information was maintained throughout the study.

Results

Table- 1 shows profile of HIV/AIDS patients. 42% of them were in 30 - 39 years of age, 25% were below 30 and 33% were of 40 years or more. Majority of them (71%) were males. 47% were having history of high risk exposure.

Table-1: Age and Gender of HIV/AIDS Patients

Age and Gender		Frequency	Percentages
Age Groups (years)	<30	25	25.0
	30-39	42	42.0
	40-49	22	22.0
	50 or More	11	11.0
Gender	Female	29	29.0
	Male	71	71.0
	Total	100	100.0

Table- 2 shows associated symptoms/signs and diseases, weight loss being most common (73%) followed by fever (60%), diarrhea for less than one month (34%), oral ulcer (33%), tuberculosis (30%), pain in abdomen (28%), pallor (21%), oral candida (17%), dysphagia (11%), diarrhea more than one month (5%), hepatosplenomegaly (3%) and lymphadenopathy (1%).

Table-2: Prevalent Symptoms/Diseases in HIV/AIDS patients

Symptoms/Diseases	Frequency	Percentages
Weight Loss	73	73
Fever	60	60
Diarrhea for Less Than 1 Month	34	34

Oral Ulcer	33	33
Tuberculosis	30	30
Pain in Abdomen	28	28
Pallor	21	21
Oral Candida	17	17
Dysphagia	11	11
Diarrhoea for more than 1 Month	5	5
Hepatomegaly	3	3
Splenomegaly	3	3
Lymphadenopathy	1	1

Data was analyzed to see if symptoms/signs and complications were associated with biological factors like age and gender; and behavioural factor like belonging to high risk group. Association was also sought among various symptoms/signs and complications. Age, gender and high risk category were not found to be associated with symptoms/signs and complications like oral ulcer, oral candidiasis, dysphagia, pain in abdomen, diarrhea, fever, weight loss, tuberculosis, pallor, oedema, lymphadenopathy, hepatomegaly, spleenomegaly and CD4 count. Analysis was also done to see if these symptoms/signs and diseases were also associated with CD4 count but no association was found between CD4 count and present symptoms/signs and diseases.

Association between Weight Loss and presence of tuberculosis, fever and diarrhea in HIV/AIDS patients was found and shown in table-3. Presence of tuberculosis, fever and diarrhea for less than one month were found significantly associated with weight loss. Out of weight losers, 35.6% had tuberculosis, 68.5% had fever and 39.7% had diarrhea for less than one month. Tuberculosis, fever and diarrhea may be the cause of weight loss in the study group patients but causality and temporality could not be established due to lack of follow up data related to clinical profile.

Table-3: Weight Loss and Associated Symptoms/diseases in HIV/AIDS patients

Symptoms/diseases		Weight Loss		Total	Significance
		Absent	Present		
Tuberculosis	Absent	23(85.2%)	47(64.4%)	70(70.0%)	P= 0.044 Chi square Test
	Present	4(14.8%)	26(35.6%)	30(30.0%)	
Fever	Absent	17(63.0%)	23(31.5%)	40(40.0%)	P= 0.004 Chi square Test
	Present	10(37.0%)	50(68.5%)	60(60.0%)	
Diarrhea for less than 1 month	Absent	22(81.5%)	44(60.3%)	66(66.0%)	P= 0.047 Chi square Test
	Present	5(18.5%)	29(39.7%)	34(34.0%)	
Diarrhea for more than 1 month	Absent	25(92.6%)	70(95.9%)	95(95.0%)	P= 0.610 Fisher Exact Test
	Present	2(7.4%)	3(4.1%)	5(5.0%)	
Total		27(100.0%)	73(100.0%)	100(100.0%)	

Note: Figures in parenthesis are column percentages.

Table-4 shows CD4 Count during Three Follow-up Visits. CD4 count was repeated after every six months. After analyzing and applying repeated measure ANOVA test, significant (p < 0.001) improvement was seen in CD4 count on starting Anti Retroviral therapy (ART).

Table-4: CD4 Count HIV/AIDS Patients during Three Follow-up Visits

Follow-up Visits	N	Mean	Std. Error	95% Confidence Interval		Significance Level
				Lower limit	Upper limit	
CD4 (first)	73	137.26	12.632	112.080	162.441	P= 0.001 Repeated measure ANOVA
CD4 (second)	73	338.92	21.910	295.242	382.594	
CD4 (third)	73	428.63	22.391	383.995	473.265	

Discussion

In present study mean age of HIV/AIDS patients was 35.8 years.

Distribution of HIV/AIDS between both genders shows that 71% were males and remaining 29% were females. Similar to this, Maheshwari M, Kaur R and Chadha S [22] reported mean age 33.4 years and males and females 68 and 32% respectively, Kiertiburanakul S et al.[23] reported males 70% and females 30% in their study. Rao KVSE et al.[24] found comparatively higher percentage of females (44%) with HIV/AIDS in their study.

In the present study, Age group distribution of HIV/AIDS patients shows 25%, 42%, 22% and 11% in less than 30, 30-40 , 40-50 and more than 50 years age groups respectively. Kiertiburanakul S et al. [23] also reported Almost similar figures i.e. 22%,43%, 24% and 11% in less than 30, 30-40 , 40-50 and more than 50 years age groups. Higher number (79%) of younger than 40 years patients were reported by Rao KVSE et al. [24] while in our study younger than 40 years patients were 67%. Regional variation in sociocultural and high risk behavior may be the reason for this.

In present study, associated symptoms/diseases were weight loss (73%), fever (60%), diarrhea for less than one month (34%), oral ulcer (33%), tuberculosis (30%), pain in abdomen (28%), pallor (21%), oral candida (17%), dysphagia (11%), diarrhoea for more than one month (5%), hepatosplenomegaly (3%) and lymphadenopathy (1%). Maheshwari M, Kaur R and Chadha S [22] reported more or less similar pattern of associated symptoms/diseases i.e. weight loss (50%), fever (70%), oral ulcer (26%), chronic cough (47%), white oral patch (28%), dysphagia (11%), diarrhea more than one month (5%), asymptomatic (13%). Antwal M et al. [25] reported comparatively low incidence of associated symptoms/diseases i.e. weight loss (9%), fever (28%), tuberculosis (12%), pallor (9.7%) diarrhea more than one month (7%), lymphadenopathy (3%). Stage and duration of HIV/AIDS in study group patients may be reason for lower incidence of associated symptoms/diseases.

In our study, oral candidiasis was present in 17% cases. In other studies, the incidence of Oral Candidiasis varies broadly from a prevalence of 81% to 11% [26-34]. Reason may be different study settings and biosocial profile and stage of HIV/AIDS.

In present study we could not found significant association between CD4 count and occurrence of oral candidiasis. Similar observation was also reported by Kore SD et al. [35] . Association of CD4 count with development of oral lesions including candidiasis has been established by various authors in their studies and reported that low CD4 counts is associated with oral candidiasis and can be considered a risk factor for the development of oral lesions especially oral candidiasis [36,37,38,39].

India is also the third country in the world in terms of number of people infected by HIV, and 9% of patients with tuberculosis who are tested of HIV are HIV-infected [40, 41]. Latent tuberculosis is common in developing countries, and the immunodeficiency produced by HIV increases the risk of developing active tuberculosis infection[42, 43]. The World Health Organization (WHO) has estimated that approximately 14 million people worldwide have HIV and Mycobacterium tuberculosis co-infection and that TB is the most common opportunistic infection in individuals with HIV infection, accounting for about 26% of acquired immunodeficiency syndrome (AIDS)-related deaths. In 2010, the WHO estimated that 39% of new TB cases occurred in people with HIV co-infection[44]. In our study 30 % of the HIV/AIDS patients were having tuberculosis.

In present study, weight loss was found significantly associated with tuberculosis but no significant change in CD4 T cell count was seen. Similar observations were found by Sudfeld CR et al. [45] and reported that weight loss at one month was also associated with incident pneumonia (P = 0.002), oral thrush (P = 0.007), and pulmonary tuberculosis (P < 0.001) but not change in CD4 T cell counts (P > 0.05). In present study, after starting of ART, CD4 Count was done during Three Follow-up Visits. On applying repeated measure ANOVA test, significant (p < 0.001) improvement was seen in CD4 count. Similarly, Kiertiburanakul S et al. [23] also reported better improvement in CD4 count in HIV/AIDS patients who started ART earlier.

Limitations: During follow up, some data of CD4 count was missing, that has been taken care of during analysis. This is a hospital based study. Although the inference obtained from hospital-based studies can not be generalized but they are still relevant and can provide many important details about the clinical profile and response to treatment in order to develop prevention and control strategies.

CONCLUSION:

Almost two third of HIV/AIDS patients were males and below forty years of age indicates that people are being affected by this deadly disease in their prime age. Weight loss, fever, diarrhea were commonest associated symptoms and tuberculosis was found in almost one third cases. HIV and tuberculosis co infection should be focused upon by health care providers. History of weight loss was significantly associated with presence of tuberculosis, fever or diarrhea in HIV/AIDS patients. Significant improvement was seen in CD4 count on starting Anti Retroviral Therapy. Thus, identification of the HIV/AIDS with associated symptoms and diseases and prompt initiation of ART can improve immunity and physical health.

Conflict of Interest: The authors declare that there was no conflict of interest.

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