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Thrombocytopenia in HIV/AIDS

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Abstract: *Increasing the complexity of HIV infection, different hematological manifestations can be seen, in which HIV-related thrombocytopenia is one of them. We evaluated the rate of thrombocytopenia (platelet count < 150 000/µL) in HIV-infected and AIDS patients. Blood samples of 400 cases of HIV seropositive, HAART naïve patients were studied .There were 162 females and 238 males during the period from April 2010 to April 2015, in Regional Institute of Medical Sciences ,Manipur. CD_4 count ranged from 56 to 706 cells /cumm. 98 patients (24.5%) had thrombocytopenia, while only 1 had severe thrombocytopenia (platelet count 10 000/cumm).*

Key words*: AIDS , ART , HIV , Platelet, Thrombocytopenia.*

I. Introduction

AIDS cause by human immunodeficiency virus (HIV), cause a continuum of progressive damage to immune system. 35 million people are infected worldwide by HIV and only an estimated 51% of people with HIV know their infection status. Hematological abnormalities are commonly seen and as such is one of the WHO Clinical stage 3 criteria for HIV staging events.(1) The incidence of the various cytopenias correlate directly with the degree of immunosuppression. However, isolated abnormalities, particularly thrombocytopenia, may be encountered as the initial presentation of HIV infection. Reported incidence widely varies from 10% to 40%.(2,3,4) Often asymptomatic, but may be associated with a variety of bleeding abnormalities that may result from multifactorial causes. Thrombocytopenia in HIV is multifactorial because of direct HIV infection of the megakaryocyte causing apoptosis, dysmegakaryopoiesis, abnormal and dysfunctional production of megakaryocytes and platelets and peripheral destruction of platelets due to cross-reactivity of HIV antibody.(5,6,7) In fact, CD_4 counts above 200 are associated with increased peripheral destruction while thrombocytopenia in CD_4 counts of < 200 is associated with decreased platelet production.(8)

The present study was done to see the prevalence of thrombocytopenia in HIV infection/AIDS patient.

II. Materials And Methods

The prospective study was carried out in the Hematology section of Department of Pathology, in collaboration with Department of Medicine, Regional Institute of Medical Sciences from February 2010 to February 2015. Altogether 400 (162 females and 238 males) patients diagnosed as HIV seropositive (as per NACO guideline for HIV testing strategies) HAART naïve were taken up for study. Complete hemogram was done by cell counter (ABX PENTRA 60) and reviewed by blood smear examination (Leishman's stain).

Patients with prior history of thrombocytopenia and those taking medication were excluded. Thrombocytopenia was defined as a platelet count of less than 150, 000/cumm of blood. Each patient with thrombocytopenia underwent precise medical history, clinical examination, routine laboratory examination, serology for HCV, HBsAg and flow cytometric analysis for different T cell markers - FACS (Fluorescent activated cell sorter).

III. Observations

Blood samples from 400 HAART naive HIV seropositive patients (162 females and 238 males) were studied. Age ranges from 21 to 70 years. The maximum number of cases was in the age 31 - 40 years **(TABLE 1).** Intravenous drug user (IVDU) was the most common risk factor (44%). Based on blood analysis, 98 patients (29 females and 69 males) out of the 400 seropositive, HAART naïve patients showed platelet count less than 150,000/cumm. The lowest was 10,000/cumm in one of the patient and 50,000/cumm in 4 patients while 33 patient had platelet count <90,000/cumm **(TABLE2).**

TABLE 1: Prevalence of thrombocytopenia according to age

Age range (years)	Number of cases **(n=98)**	
	No	**%**
21-30	16	4
31-40	51	12.7
41-50	24	6
51-60	06	1.5
61-70	01	0.25

TABLE 2: Frequency of the different levels of platelet count.

Platelet count /cumm	Number of patients **(n=400)**	
	No	%
<20,000	01	0.25
20,000-90,000	32	8
100,000-150,000	65	16.25
>150, 000	302	75.5

Out of the total 400 patient, 281 had CD_4 count less than 200 cells/cumm,112 had count between 200 – 500 cells/cumm and 7 patients had count above 500 cells/cumm.

Table 3 show the platelet count according to different CD_4 levels.

Table 3: Platelet count according to CD_4 Tcell count.

CD_4 Tcell count (cells/cumm)	Platelet count/cumm **(n =400)**			
	<20,000.	20,000-90,000	100,000-150,000	>150,000
<200	01	26	50	204
200-500	00	06	12	94
>500	00	01	02	04

IV. Discussion

The rate of thrombocytopenia in our study was 24.5%,which exceeded the rate reported in a retrospective study in San Francisco (> 11%) and from the Multicenter AIDS Cohort Study of 1500 patients in pre-AIDS phase (6.7%).[7,8] In another study of 516 HIV-infected patients, the prevalence of thrombocytopenia was 15.5% .[9] In a meta-analysis of 5 trials involving more than 3 000 patients, both treatment-naïve and treatment-experienced patients, thrombocytopenia was found to be one of 8 factors that correlated with a poorer prognosis and more rapid progression to full-blown AIDS in spite of antiretroviral treatment.[10]

Maximum number of cases was in the age group of 31 and 40 years. Since 67 cases were between 20 and 40 years, the age distribution in patients with thrombocytopenia is similar to the general pattern of age distribution and it has no particular effect on age groups. In other studies, the rate of thrombocytopenia has been reported to be more common among older age groups.[11] 57% of the IVDUs had thrombocytopenia. The rate of thrombocytopenia in patients with CD4 T cell counts higher than 500 cells/mL was 0.75% in comparison with 4.5% and 19% among patients with CD4 T cell counts between 200 and 500 cells/mL and patients with CD4 T cell counts < 200 cells/mL respectively. Studies have also demonstrated increased prevalence of thrombocytopenia in advanced or intermediate stages of HIV infection.

HIV related ITP is similar to non HIV ITP, however it is distinct in several respect including its tendency to respond to antiretroviral therapy specially Zidovudine.[11] Follow up study of the present cases after 6 months of HAART showed increased platelet count in majority of the cases. 92 cases responded to therapy with increase in platelet count above baseline of 150,000 cells/cumm, while 4 cases had a slower progress to therapy although platelet count showed increase in number but below the normal range.

V. Conclusion

HIV positive cases are increasing, especially in the developing countries; consequently, a great clinical suspicion is needed to consider it as a cause of thrombocytopenia, especially of undetermined etiology for prompt initiation of anti-retroviral therapy (ART) to which it responds favorably. It presents same as that of Immune thrombocytopenic purpura and without knowing the HIV status these patients would have been given unguarded steroid and /or immunosuppressive therapy which are not only deleterious but also depriving the patients of the specific and effective treatment with HAART(highly active anti- retro viral therapy).

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