



Original Research Article

Thrombocytopenia among HIV infected patients attending a tertiary care hospital in India

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ABSTRACT

Background: Thrombocytopenia is a frequent hematological complication of human immunodeficiency virus infection which can occur at any stage of HIV infection. The various cytopenias correlate directly with the degree of immunosuppression. However, isolated thrombocytopenia, may be the initial presentation of HIV infection. Incidence of thrombocytopenia is around 10% - 40% and in some patient only thrombocytopenia may be the first sign of HIV infection or AIDS. Since few studies are available from Asian countries we decide to study thrombocytopenia in HIV infection or AIDS from India.

Materials and Methods: The study was conducted at a teaching hospital in India after obtaining ethical permission from the institute. Subjects were recruited after taking written informed consent. Two hundred subjects of both sex and in the age group 18-60 years were recruited for study. Blood samples were collected and analysed on same day within two hours. Platelet count of < 1.5 lakh/mm³ was defined as thrombocytopenia. Data analysis was carried out using Statistical Package for Social Science (SPSS) version 16.0. p value < 0.05 considered as significant and p value > 0.05 non-significant.

Results: The mean platelet count was 2.06935lakh/ mm³ and highest and lowest platelet count were 4.1lakh/mm³ and 0.63lakh/mm³ respectively. Out of two hundred, 8.5% subjects had thrombocytopenia. Females had a slightly higher prevalence as compared to males but it was not statistically significant (p=0.22). Likewise more of younger age group patients had thrombocytopenia. No significant relation was found between platelet count and ART status (p=0.773).

Conclusion: Thrombocytopenia is a common finding in HIV infection. Peripheral destruction of platelets and ineffective platelet production leads to thrombocytopenia among HIV patients. ART improves platelet count and must be started as soon as possible.

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1. Introduction

The human immunodeficiency virus (HIV) was not known until the 1980's. Since then infecting millions of people all around the world. The HIV infection weakens immune system and leads to acquired immunodeficiency syndrome (AIDS). AIDS resulted in the death of over 50% of its patients. All HIV-infected individuals are always at higher risk for illness and death when compared to non- infected individuals. The opportunistic infections and neoplastic complications caused due to AIDS are responsible for it.^{1,2}

Globally, HIV/AIDS is the fourth leading cause of death, accounting for about 4.8% of all mortality, and surpassed only by heart disease, cerebrovascular disease, and lower respiratory infections.³

The various cytopenias are common in HIV infection and it correlate directly with the degree of immunosuppression. However, isolated cytopenia like thrombocytopenia, may be the initial presentation of HIV infection. In HIV/AIDS patients, approximate incidence of thrombocytopenia is around 10% - 40%. In approximately 10% of AIDS patients, thrombocytopenia may be the first and only sign to be detected.⁴

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HIV infection or AIDS is well known cause of chronic immune thrombocytopenic Purpura⁵ Thrombocytopenia can occur at any stage of HIV infection /AIDS and is a common finding in individuals infected with HIV. Incidence of thrombocytopenia was inversely proportional to CD4+ count. With approximately 3% incidence in patients with CD4+ count more than 400, thrombocytopenia increases to 10% in patients with CD4+ count less than 400. Clinically, it is similar to thrombocytopenia seen in patients with idiopathic thrombocytopenic purpura (ITP).^{6,7}

Most of these studies on platelet status and thrombocytopenia in HIV infection are from developed countries and African countries but less data is available from Asian countries like India. So we decided to study platelet status and prevalence of thrombocytopenia in HIV patients from India.

2. Materials and Methods

This descriptive cross-sectional study was done at a tertiary care teaching hospital in India. Institutional Ethical clearance was obtained before the start of the study via letter No./Pharm/IEC/Approv letter 598/11. This Institute has Integrated counselling and testing center (ICTC) under supervision of National AIDS Control Organization (NACO). Hospital provides medical care and Ante Retroviral Therapy (ART) to HIV infected individuals.

Following inclusion criteria applied for selection of subjects

HIV positive subjects both male and female of age group 18-60 years were selected. Subjects who have given the written informed consent.

Following exclusion criteria applied for exclusion of subjects

Subjects below 18 years and above 60 years. Subjects with known hematological disorders like sickle cell anemia, Hemophilia Thalassemia etc. and terminal illness were excluded. Subjects with history of recent blood transfusion and pregnant women were excluded from the study.

The purpose of the study was explained to the participants and their queries regarding the study were addressed. After obtaining written informed consent the subjects were recruited for study. Socio-demographic variable and patient history was collected using a structured questionnaire.

The subject after being seated comfortably, with all aseptic precautions five ml of venous blood was collected from ante cubital vein in an EDTA bulb. All the samples were analyzed within two hours of sample collection.

Platelet count along with other hematological parameters like Hemoglobin, Packed cell volume (PCV), Total Leucocyte Count (TLC) Erythrocyte Sedimentation Rate (ESR) etc. were studied on ERMA-PCE 210 blood cell counter. Platelet count within 1.5 lakh/ mm³-4.5 lakh/ mm³ taken as normal whereas Platelet count less than 1.5

lakh/mm³ of blood was used to define thrombocytopenia.

Proportions were compared using chi-square test of significance. Student t test was done as indicator of statistical significance. Data analysis was done using Statistical Package for Social Science (SPSS) version 16.0. The p value < 0.05 was taken as significant.

3. Results

A total of two hundred subjects from both sexes were selected for the study. The mean platelet count was 2.06935lakh/ mm³ and highest and lowest platelet count were 4.1lakh/mm³ and 0.63lakh/mm³ respectively. Out of two hundred, 17 (8.5%) subjects had thrombocytopenia.

Table 1 shows thrombocytopenia according to sex. Prevalence of thrombocytopenia in male and female was 6(6.06%) and 11(10.89%) respectively. Female shows slightly higher prevalence as compare to male but it was not significant (p=0.22).

Table 2 shows thrombocytopenia according to different age groups. Prevalence of thrombocytopenia in age group 18-30year, 31-40 year, 41-50 year and 51-60 year were 5(10.20%), 8(8.69%), 3(7.14%) and 1(5.88%) respectively. Higher prevalence observed in younger age group as compare to older age group.

Table 3 shows thrombocytopenia according to the ART status. Thrombocytopenia was observed among 8.38% on ART and in 9.09% subjects not on ART, though it was not statistically significant.

4. Discussion

This descriptive cross-sectional study was done at a tertiary care teaching hospital and medical college among two hundred subjects including both male and females. The mean platelet count was 2.06935lakh/ mm³ and highest and lowest platelet count were 4.1lakh/mm³ and 0.63lakh/mm³ respectively. Out of two hundred 17 (8.5%) subjects had thrombocytopenia. Females showed a slightly higher prevalence of thrombocytopenia as compared to males. Higher prevalence was also observed among younger age group.

Disorders of the hematopoietic system like anemia, leucopenia and thrombocytopenia are common in HIV infection. These may be due to direct effects of HIV infection, secondary infections, neoplasms or side effects of ART. Among HIV/AIDS patients 10% - 40% suffer from thrombocytopenia during the course of illness. The mechanism of HIV related thrombocytopenia is multifactorial. Immune-mediated destruction of platelets by different antibodies and cross-reacting antibodies which are directed toward proteins of HIV particularly GP120 and P-24 are observed. This may cause peripheral destruction of platelets in the spleen, liver, and bone marrow along with this ineffective platelet synthesis leading

Table 1: Thrombocytopenia according to sex

Sex	No. of cases	Thrombocytopenia (%)	Chi-square	P
Male	6	6.06	1.5	0.22
Female	11	10.89		

Table 2: Thrombocytopenia according to age-group

Age group(years)	No. of cases	Thrombocytopenia (%)	Chi-square	P
18-30	5	10.20		
31-40	8	8.69		
41-50	3	7.14	1.527	0.676
51-60	1	5.88		

Table 3: Thrombocytopenia according to ART

ART	No. of cases	Thrombocytopenia (%)	Chi-square	P
ART	14	8.38	1.5	0.22
Non-ART	3	9.099		

on to thrombocytopenia. Infection of the megakaryocytes affect function and maturity of platelets.⁸ Disorders of the hematopoietic system like anemia, leucopenia and thrombocytopenia are common in HIV infection. These may be due to direct effects of HIV infection, secondary infections, neoplasms or side effects of ART.

In a study from Uganda, prevalence of thrombocytopenia was 8.3% among adult AIDS patients.⁹ The study showed that the prevalence of different types of cytopenia was seen more among female sex and was associated with decreasing CD4 count and decreasing body mass index. In the present study we found similar result with 8.5% thrombocytopenia and which was slightly higher in females. Observation similar to present study were found in other studies by Dikshit et al and Erhabor et al.¹⁰ In contrast, a study from Punjab observed thrombocytopenia in 22.2% and 7.14% in males and females respectively.^{11,12} A study from Zimbabwe and some other studies from India also observed higher prevalence of thrombocytopenia as compared to present study.^{13–15}

Recent studies have also reported a low prevalence of thrombocytopenia among HIV/AIDS patients. A Korean study done to investigate the hematological manifestations of human immunodeficiency virus infection, and the effect of highly active anti-retroviral therapy on cytopenia find frequency of cytopenia like anemia (3.0%), neutropenia (10.0%), thrombocytopenia (2.4%) and lymphopenia (25.7%). After three years of Highly Active Ante-Retroviral Therapy (HAART), thrombocytopenia reversal was almost 100% when compared to 91.1% in neutropenia and 84.6% in anemia.¹⁶ A study from North India also observed a low prevalence 4.8%. It also observed improvement in thrombocytopenia after ART.¹⁷ This observations underlines the importance of HAART or ART in HIV infection.

These variations in the prevalence of thrombocytopenia in other studies and present study may be due to following

reasons. Subjects recruited in various studies may be in different stage of illness or AIDS. In present study we excluded the subjects with terminal illness or subjects with advanced stage of disease and thus relatively healthy subjects were selected. ART is also known to have favorable effect on platelet count. Most of our subjects were on ART and thus it might have contributed to the low prevalence of thrombocytopenia.

5. Conclusion

Thrombocytopenia is a common finding in HIV infection. As it may be the only presenting symptom in HIV infection the problem of thrombocytopenia must be properly evaluated in people with higher risk of HIV infection. Many factors causing peripheral destruction of platelets and ineffective platelet production leads to thrombocytopenia. ART improves platelet count and must be started as soon as possible.

6. Source of Funding

Nil.

7. Conflict of Interest

None.

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