



## HIV ASSOCIATED THROMBOCYTOPENIA

### Haematology

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### ABSTRACT

HIV is disease that compromise the immune system and brings the opportunist infection and associated diseases and disorders, thrombocytopenia is one among that which is caused due to impairment in the megakaryocytes, affected due to HIV infection. Further symptoms are similar to thrombocytopenia and the management. The present article describes the prevalence, causes, pathophysiology, clinical findings, diagnosis and management of HIV associated thrombocytopenia.

### KEYWORDS

#### INTRODUCTION

HIV is human immune deficiency virus causes immune deficiency and weakness, symptomatic HIV infection called AIDS, is a disorder caused due to sexual contact with HIV infected individual, blood transfusion of infected individual with healthy person, mother to child transmission, sharing of sharps and needle. HIV is associated with various health hazards majority of which are caused due to immunodepression leads to opportunistic infection, diarrhea, fatigue, weakness. Apart from other disorders thrombocytopenia a low platelet disorder is associated with HIV infection.

The chronic thrombocytopenia a low platelet count in circulating blood, thrombocytopenia is a hematological disorder and is common in patients with HIV. The pathology of HIV associated thrombocytopenia includes the acceleration of platelets destruction, decreased production of platelets due to infected megakaryocytes.

Similarly symptoms related to thrombocytopenia are exhibited purpura, fatigue, weakness, bleeding, petechiae. The management of HIV in thrombocytopenia by antiretroviral therapy, and steroids, intravenous immunoglobins and surgical procedure includes splenectomy. The interferons, vincristine, danazol are used for better management. The hyperstimulation of megakaryocytopoiesis used are PEG-rHuMGDF and chemokine receptors antagonist are effective in modifying course of the disease.<sup>1</sup>

#### Prevalence of the HIV associated thrombocytopenia

17.9% is the prevalence of thrombocytopenia among HIV patients, with good initiation of HAART treatment the rate is 11.64% signifies that with better treatment the prevalence of HIV associated thrombocytopenia can be reduced.<sup>2</sup> 10% of HIV patients can develop thrombocytopenia in span of 10 years.

#### Mechanism of cause of HIV associated thrombocytopenia

Megakaryocytes produces the platelets by cytoplasmic shedding directly into bone marrow. The immunological cause destruction of the platelets which results in decrease circulating platelets, the immunological drive is due to viral infection and change in the pattern of the formation of platelets by megakaryocytes.

The other mechanism is by insufficient platelet production by the megakaryocytes leads to platelets deficiency results in the symptoms of bleeding related complication.

#### Causes of the HIV associated thrombocytopenia

The HIV associated thrombocytopenia are classified as Primary HIV associated thrombocytopenia and secondary thrombocytopenia. The primary HIV associated thrombocytopenia is similar to Idiopathic thrombocytopenia.

The secondary thrombocytopenia is caused due to malignancy, autoimmune disease. Myelodysplastic syndrome, lymphoproliferative disorders, chronic Hepatitis C virus, H.Pylori organism. Heparin induced thrombocytopenia is common in HIV patients.<sup>2</sup>

#### Pathophysiology of HIV associated thrombocytopenia

The primary HIV associated thrombocytopenia is caused by increase in bone marrow megakaryocytes lead by increased endogenous thrombopoietin, but the deficit of reaching the demand of viable platelets by megakaryocytes and shortness of lifespan of platelet leads to low platelet counts.

On other hand ineffective platelet production as HIV infect the production of megakaryocytes and megakaryocytes apoptosis increased due similar transcript in megakaryocytes and HIV.

The shortness of platelet lifespan due to antiplatelet antibodies. The platelet associate IgG antibodies react with PLT GPIIb/IIIa and HIV env GP160/120. Further anti HIV antibodies bind to normal control platelets results in low platelet in circulating blood.<sup>3</sup>

#### Clinical manifestation of HIV associated thrombocytopenia

The signs and symptoms are similar to the thrombocytopenia with HIV clinical pictures they are Sever bleeding, petechiae, purpura, bruising, epistaxis, gingival bleeding, menorrhagia, gastrointestinal bleeding, gross hematuria and intracranial hemorrhage.

#### Diagnosis of the HIV associated thrombocytopenia

The primary HIV associated thrombocytopenia are not identified with clinical routine, but the laboratory findings can aid in diagnosis, however the secondary HIV associated thrombocytopenia can be by blood investigation where in cause is due to bacterial or viral like Hepatitis C virus, H pylori, lymphoma, systemic lupus erythematous, immunothroiditis.

- Blood picture, clotting time, bleeding time, platelet count
- Drug investigation in case of heparin induced thrombocytopenia.
- Anti-platelet antibody testing
- Bone marrow aspiration assay
- Heparin induced thrombocytopenia is common in HIV patients, who receive unfractionated heparin for less than 5days.

#### Management of HIV associated thrombocytopenia

- The platelets count is assessed and presence of co-morbid condition that can risk bleeding complications hemophilia, metastatic malignancy.
- Assess the remission of the HIV associated thrombocytopenia and antiretroviral therapy is administered.
- The asymptomatic and ART thrombocytes more than 30000 micro Liter, glucocorticoids are given following the intravenous bleeding immunoglobulins, anti RHD, rituximab.
- Platelet transfusion in severe bleeding cases.
- AZT (Zidovudine) regimen is administered, pre AZT for 10 months steroids are given. AZT monotherapy is effective in better treatment and improves the platelet counts.
- HAART (Highly active antiretroviral therapy) combination is used with AZT which help in increasing the platelets.
- Additional the steroids used are prednisone, dapsone are used to improve the platelet counts.<sup>5,6</sup>

#### CONCLUSION

HIV associated thrombocytopenia are the blood related disorders of the HIV patients, results in multifactor disorder, caused due to immune deficit mechanism, the best treatment and the guidelines are available for the management of HIV infection which reduce the incidence of the complication associated with HIV. That available treatment for the management of the HIV can prevent the low platelet count and prevent the incidence of the thrombocytopenia.

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