Isolated Plasmodium Vivax Malaria associated Thrombocytopenia

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ABSTRACT

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Malaria is an endemic disease in India. It is a mosquito-borne infectious disease caused by a eukaryotic protist of the genus Plasmodium. Thrombocytopenia frequently complicates malarial infections and usually noted in Plasmodium Falciparum. Here we report a case of Plasmodium vivax associated thrombocytopenia which is a rare presentation in P.vivax. He was initiated on anti malarial regimen as per WHO guidelines and showed significant improvement in symptoms and thrombocytopenia.

Keywords: Plasmodium vivax, Thrombocytopenia, Peripheral Smear

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CASE SUMMARY

A 46 year old male got admitted with a history of fever since 3 days and gum bleeding since 2 days. No bleeding manifestation elsewhere from body. Fever was not associated with chills or rigors. He was a chronic alcoholic. Patient had travelled to coastal area of Tamil Nadu, India a week prior to admission. On general physical examination he is moderately built moderately nourished male weighing 64 kgs and a height of 158 cms. Bilateral mild non tender parotid enlargement noted, no pedal edema or clubbing was present.

Systemic examination was within normal except for mild non tender hepatomegaly. Clinical examination was suggestive of an arboviral illness hence routine blood investigation with peripheral smear study was done. Investigations revealed thrombocytopenia and peripheral smear showed Plasmodium Vivax with moderate thrombocytopenia. Repeat smear was done in suspicion of Plasmodium Falciparum but smear did not reveal Falciparum. Hence, initiated on cloroquine and acetaminophen oral medication as per WHO guidelines for uncomplicated malarial infection. He showed significant improvement in symptoms and thrombocytopenia.

INVESTIGATIONS

Peripheral smear study

Plasmodium Vivax noted

Moderate thrombocytopenia

Table 1. Hematology

Date	14/4/2010	15/4/2010	16/4/2010	19/4/2010
Haemoglobin/PCV	19.0gm/dl / 44.4	-	-	-
WBC Count	7,600 cells/mm^3	9,500 cells/mm^3	7,100 cells/mm^3	-
Polymorphs	70%	58%	58%	-
Lymphocytes	28%	32%	32%	-
Eosinophils	2%	1%	1%	-
Monocytes	0%	9%	9%	-
Platelet Count	90,000 cells/mm^3	57,000 cells/mm^3	39,000 cells/mm^3	73,000 cells/mm^3

Table 2. Viral Markers

HBsAg	Negative
Anti HAV IgM/IgG	Negative

Table 3. Serology

Anti Dengue IgM/IgG	Negative
Anti Leptospira IgM/IgG	Negative

DISCUSSION

Malaria is a common infection in most parts of India and is commonly associated with mild thrombocytopenia.[1] Profound thrombocytopenia is a well-recognized complication of falciparum malaria but has been less well described in vivax malaria. Of 173 cases of malaria in U.S. soldiers reported by Marteloet al[2] in 1969, 93% had P. vivaxbut only 15% had thrombocytopenia with

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Table 4. Liver Function Test	
SGOT	41 IU/L
SGPT	60 IU/L
Alkaline Phosphotase	121 IU/L
Serum Bilirubin	1.61 mg/dl
Direct	0.48 mg/dl
Indirect	1.13 mg/dl
Total Protein	6.9 mg/dL
Albumin	3.9 mg/dL
Globulin	3.0 mg/dL
A/G Ratio	1.3

Ultrasound Abdomen: Fatty Liver

no documentation of the lowest platelet count. In Horstmann's series,[3] the lowest count in 39 cases of vivax malaria was 44x109/L. Pukrittayakamee et al.[4] described a case of a volunteer experimentally infected with the Chesson's strain of P. vivax with a platelet count of 20x109/L. Recently 2 cases of vivax malaria associated with an initial platelet count of 5x109/L and 8x109/L was reported from India.[5] In our case, the patient presented with a severe thrombocytopenia of 39x109 /L, with spontaneous bleeding from the gums. This is probably one of the few case ever reported of isolated P. vivax infection causing such profound thrombocytopenia. The mechanism of thrombocytopenia in malaria is not clearly known. Fajardo and Tallent[6] in 1974 demonstrated P. vivax within platelets by electron microscopy and suggested a direct lytic effect of the parasite on the platelets. Both non-immunological destruction[7] as well as immune mechanisms involving specific platelet-associated IgG antibodies that bind directly to the malarial antigen in the platelets have been recently reported to play a role in the lysis of platelets and the development of thrombocytopenia.[8] In clinical trials, recombinant - macrophage colony stimulating factor (M-CSF) has been known to cause a reversible dose dependent thrombocytopenia. Elevated M-CSF levels in malaria, by increasing macrophage activity may mediate platelet destruction in such cases.[9] Oxidative stress damage of thrombocytes has also been implicated in the etiopathogenesis based on the finding of low levels of platelet superoxide-dismutase and glutathione peroxidase activity and high platelet lipid peroxidation levels in malaria patients, when compared to those of healthy subjects.[10] Since such severe thrombocytopenia is rare in vivax malaria, and mixed infection with falciparum and vivax is common in India, it could be argued that this case is associated with coexistent P. falciparum infection. Hence repeated blood sample was taken and closely observed for any falciparum infection co existing with the plasmodium vivax. The treatment was initiated as uncomplicated plasmodium vivax anti malarial treatment regimen as per new WHO guidelines and patient showed dramatic recovery in the symptoms and thrombocytopenia. No bleeding manifestation was noted later.

END NOTE

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