

# Plasmodium Vivax Malaria with Severe Thrombocytopenia and Varied Skin Manifestations: A Case Report

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**Abstract** Plasmodium vivax malaria is an endemic infection in India and is commonly associated with mild haematological abnormalities. Severe thrombocytopenia as well as purpuric skin manifestation are common in isolated falciparum and mixed falciparum/vivax malaria, but is very rare in isolated P.vivax infection. We hereby report a case of severe thrombocytopenia in a case of vivax malaria along with skin lesions presenting as purpura, ecchymosis and urticaria. Vivax malaria can no longer be considered as benign and atypical presentations with severe complications should be borne in the minds of physicians especially in a malaria endemic country like India.

**Keywords:** Malaria, Plasmodium vivax, severe thrombocytopenia, purpura, ecchymosis

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## 1. Background

Plasmodium vivax infection has been considered for a long time as a benign and self limited disease. When we talk about severe malaria, we usually think of Plasmodium falciparum. However, in recent times, Plasmodium vivax has also been reported to cause severe multi-organ dysfunction and life-threatening disease similar to P. falciparum. [1] Though mild thrombocytopenia is common in both falciparum and vivax malaria, severe thrombocytopenia and bleeding manifestations have been reported especially in Plasmodium falciparum malaria and is very rare in isolated Plasmodium vivax infection. [2] Furthermore, cutaneous lesions in malaria are rarely reported and include urticaria, erythema, angioedema, petechiae, purpura, and disseminated intravascular coagulation and have been described as mainly associated with falciparum. [3] Herein we report a 35 years old male with vivax malaria having severe thrombocytopenia with purpuric skin manifestations.

## 2. Case Report

A 35 years old male, non diabetic, non hypertensive was admitted following fever for two days with chills, rigor and associated non productive cough and breathing difficulty for two days. Two days after fever the patient developed purpuric, ecchymotic and urticarial lesions on

both lower limbs and upper limbs. The patient also developed urticarial lesions over the back. The patient did not complain of headache, arthralgia, myalgia, burning sensation on micturition or passage of loose stool, bleeding from gums or any other natural orifices. He had no history of travel or drug intake. On examination pulse was 120 per minute, blood pressure was 90/60 mm mercury and respiratory rate was 30 per minute. Chest examination revealed crepitations on base of both lungs. Abdomen examination revealed palpable spleen 2 fingers below costal margin. Patient had purpuric lesions on skin overlaying both shin bone, posterior aspect of both forearms and arms. It was non itchy and non palpable. The patient had non palpable purpuric lesions over the chest and abdomen. He had urticarial lesions on forearms and lower aspect of his back. Investigations revealed Hb 12.2 g/dl, Total Leukocyte Count (TLC) 25000/cumm (probably due to hemoconcentration), platelets <20000 /cumm, urea 200 mg/dl, creatinine 5.9 mg/dl, Prothrombin Time was 16.3 sec, INR 1.28, HIV 1&2 antibody negative,. Blood for malarial dual antigen (Plasmodium LDH card test ) was positive for Plasmodium vivax. Peripheral blood smear showed schizonts of plasmodium vivax. Anti malarial drug in the form of injection artesunate was started in a dose of 2.4 mg/kg and same dose repeated after 12, 24 hours. Blood for platelets, TLC, PCV, renal function test were monitored daily. Blood for NS 1 antigen was negative. Blood for IgM scrub typhus by immunochromatographic test was negative. However, patient's platelet count decreased significantly below

10,000 /cumm on second day of admission. He received 10 units of platelet transfusion. With injection artesunate patient's condition gradually improved with improvement in blood parameters including TLC, renal function test, platelets, packed cell volume. On the fifth day, blood for IgM by immunochromatographic test for dengue was sent which came out to be negative. The patient was discharged on the seventh day of admission being with stable vitals, reasonably normal blood parameters and no appearance of new skin lesions and an advice to follow up.

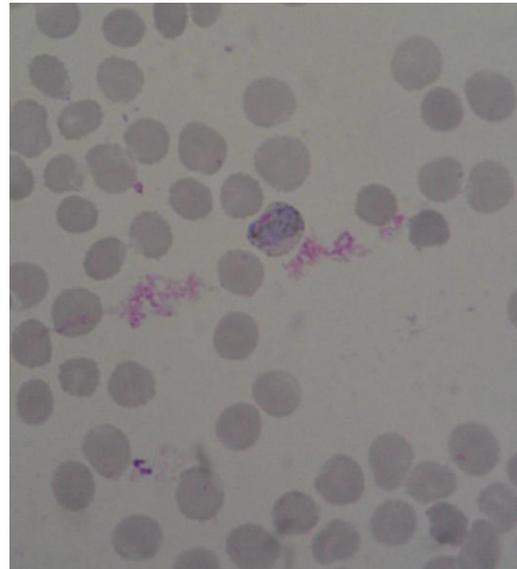
### 3. Discussion

Malaria is a common infection in most parts of India and is commonly caused by *P. falciparum* or *P. vivax* and rarely by *P. ovale*, *P. malariae*. Mild thrombocytopenia is a common feature of acute malaria and occurs in both *P. falciparum* and *P. vivax* infections. [4] Profound thrombocytopenia is a well recognised complication of *falciparum* malaria but has been less well described in *vivax* infections. Of 173 cases of malaria in U.S. Soldiers reported by Martelo et al in 1969, 93% had *P. Vivax* but only 15% had thrombocytopenia with no documentation of the lowest platelet count. [5] In Horstmann's series the lowest platelet count in 39 cases of *vivax* malaria was  $44 \times 10^9/L$ . [6] Makkar et al reported a case of *P. vivax* presenting with bleeding gums and a platelet count of 8,000/ $\mu l$ . [7] Going through the literature, lowest ever platelet count reported in a case of *P. vivax* was 5,000/ $\mu l$ . [8] In our case there was profound thrombocytopenia below 10000 which is indeed a rare finding with respect to *P. vivax* infections. Furthermore as peripheral smear findings documented trophozoites of *P. vivax* the chances of a mixed malarial infection were also ruled out and the thrombocytopenia can be solely attributed to *P. vivax*. The mechanism of thrombocytopenia in *vivax* malaria has not yet been clearly elucidated. It has been proposed that platelet phagocytosis could be mediated by the increase in P-selectin expression in the surface of activated platelets. [9] In another study it was postulated that platelet phagocytosis associated to thrombocytopenia and correlates with TNF- $\alpha$ , acytokine normally attributed to severity in malaria. However a definitive mechanism accounting for the thrombocytopenia is still elusive. On the other hand cutaneous lesions in malaria are rarely reported and include urticaria, erythema, angioedema, petechiae, purpura, and disseminated intravascular coagulation. Cutaneous lesions have been described with both *falciparum* and *vivax* malaria but are extremely rare in cases of *vivax* malaria. [3] Recently Zaki et al. reported a case of *vivax* malaria with skin rash. [10] However such reports are few and scarce. Although the exact pathogenesis of skin lesions in malaria is not known, these may reflect part of different immunological consequences during malarial infection. Hence our case presenting with severe thrombocytopenia along with purpuric skin lesion is a rare and infrequent presentation of *P. vivax* malaria.

### 4. Conclusion

*Vivax* malaria can no longer considered to be benign. Thrombocytopenia is indeed a common complication of

*vivax* malaria and profound thrombocytopenia can occur too as is seen in our case. Furthermore, although the cutaneous lesions in malaria are not specific, but when associated with systemic features including peripheral smear findings, it can help in the diagnosis of malaria. Severe *vivax* malaria is a relatively new clinical entity and physicians especially those in endemic areas should be aware of the varied manifestations so that the diagnosis and treatment are timely and morbidity and mortality minimized.



**Figure 1.** Peripheral blood smear of the patient showing mature schizonts of plasmodium vivax.



**Figure 2.** Ecchymosis and purpuric lesions on both lower limbs



**Figure 3.** Urticarial lesions involving upper limb

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