

Significance of thrombocytopenia in different types of malaria

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Abstract

Introduction: Malaria is a major health problem in India. It usually presents with thrombocytopenia, Study was conducted to assess the presence and severity of thrombocytopenia in malaria- fever. This study was done in at tertiary care teaching hospital associated with medical college. **Method:** A total of 120 patients with acute febrile illness and positive for malaria parasite were included. They all are positive for malaria parasite on peripheral smear examination with leishmans stain on conventional microscopy. Platelet count was done on a fully automated, hematology analyzer. **Results:** Thrombocytopenia was observed in 100% cases of malaria caused by P. Falciparum and 69.79% cases of malaria caused by P Vivax. Overall 85.83% of patients with acute febrile illness due to malaria showed thrombocytopenia. **Conclusion:** Thrombocytopenia is a common finding in malaria- fever, but its presence is not a distinguishing feature between Pl. vivax and Pl. falciparum. Our study noted the importance of thrombocytopenia as an indicator of malaria in acute febrile illness.

Key Words: Malaria, Thrombocytopenia, P. falciparum, P. vivax

Introduction

Malaria is a major public health problem in tropics with increase morbidity and mortality with an annual incidence of about 216 million cases of malaria and an estimated 6,55,000 deaths in 2010 [1]. Malaria is endemic in 91 countries and India contributes 77% of the total malaria cases in Southeast Asia [2]. Diagnosis of malaria at early stage leads effective management of malaria [3] [4] [5]. Simple method for diagnosing the malaria is preparing the thick and thin blood films stained with Leishman's stain and do examination under conventional light microscope [3] [5] [6]. Polymerase chain reaction (PCR) is the most sensitive method but it cannot be used for routine purposes [3] [6]. Microscopy remains the gold standard for the diagnosis of malaria. Malaria parasite many not be visible on a single slide and multiple slides many be needed. In patient suffering from an acute febrile illness testing negative for malarial therapy is always difficult. Most of the time a delay in initiating antimalarial

treatment results in catastrophe [7]. Purpose of this study was to identify the significance of thrombocytopenia in malaria. Presence of thrombocytopenia may increase the suspicion of malaria in endemic areas, thus prompting a search for the malaria parasite and an early administration of the specific therapy.

Study Design: This will be a retrospective as well as prospective study of malaria diagnosed patients with examination of peripheral smear, hematological counts & antigen study wherever necessary for a minimum of 120 patients. This was a hospital based study conducted from April 2015 to September 2015 for 6 months. All departments of Chirayu Medical College and clinics around Hospital contribute in this study.

Demographic data and clinical information of patient was included. Platelet count changes in relation to the type of malaria were noted down. Other causes for low platelet count were not included in this study.

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Material & Methods

Platelet count was done on an automated cell counter machine. Malaria parasite was confirmed by thin films stained by Leishman's stain. All malaria positive smears were seen by pathologist for identification. Most common malaria species are plasmodium Falciparum and plasmodium vivax. Manual method for counting the

platelet on positive smear was also done. Other laboratory investigation were performed as & when required. Thrombocytopenia was defined as mild when 50,000-1 lac/cu.mm, moderate when 20,000-49000/cu.mm and severe when platelet count is less than 20,000/ cu.mm. Data was entered in excel spread sheet and statistical analysis was performed.

Observation and Result

Out of the 120 patients, P. vivax was commoner than P. falciparum-96 (80%) Vs 24 (20%). The mean age ranges of the patients was 5 years to 75 yrs. Males outnumbered females, 76 (63.33%) Vs 44 (36.60%). Over all 103 (85.83%) patients were found to have low platelet count. The mean platelet count was 22,000-3,40000/cu.mm. Among 24 P. Falciparum malaria cases, all 24 cases (100%) had thrombocytopenia and the mean platelet count was 53,041.66 platelet/cu.mm (range 22,000-90,000 platelet/ul). Whereas out of 96 P. vivax cases, low platelet count was observed in 67 (69.79%) patients and mean platelet count was 91126.58 (range 22,000-3,40000/cu mm). Presence and severity of thrombocytopenia was compared between the two groups and results obtained which are tabulated as follows:

Platelet Count	P. Falciparum	P. Vivax
Normal platelet count	0	12 (15.18%)
Mild thrombocytopenia	13 (54.16%)	42 (62.68%)
Moderate thrombocytopenia	11 (45.83%)	25 (37.31%)
Severe Thrombocytopenia	0	0
Total	24	79

In most of the patients, platelet count became normal within 4-6 days of treatment. There was no case of cerebral malaria caused by P. falciparum.

Discussion

Malaria fever remains a major health problem in our country. Thrombocytopenia is also seen in patients with acute febrile illness due to viral causes, but its presence is considered as diagnostic clue for malaria in endemic areas as stated by other investigators [8] and particularly so when associated with anemia[9]. Thrombocytopenia is a common feature of acute malaria and occurs in both P. Falciparum and P.Vivax infections regardless of the severity of infection. The absence of the normal quantity of platelets on a peripheral smear in a case of fever is often a clue to the presence of malaria as seen in previous study [10] which is also observed in present study. Variable degree of reduction in circulating platelet count are consistently reported in different types of malaria[11]. Severe thrombocytopenia is quite rare in P. vivax malaria[12] [13]. In present study, severe, thrombocytopenia is not observed. Platelet counts of 20,000/ul or less have been reported in 1.5% and 8.5% in P. Vivax and P. Falciparum malaria respectively in a large study involving 1500 cases of malaria in India[9]. In present study there was finding of significant difference in the incidence of thrombocytopenia in P.

falciparum, which is 100% and in P. vivax it is 69.79%. Malaria with thrombocytopenia is observed in 85.83% of patients. While other studies shows much lesser incidence [4]. P falciparum was found in 24 cases and all are thrombocytopenic (100%), which is higher than other previous studies[14]. But P. vivax was found with thrombocytopenia in 67 cases (69.79%) out of 96 cases which is similar to previous study [14]. The mechanism of thrombocytopenia in malaria is not well understood but decreased thrombopoiesis [15], peripheral destruction induced by P. falciparum immune complexes generated by malarial antigens leading to sequestration of the injured platelets by macrophages in the spleen [16].

Conclusion

On the basis of study we can make a high suspicion of malaria in those febrile cases which are associated with thrombocytopenia. Presence of thrombocytopenia is not a distinguishing feature between the two types of malaria. Thrombocytopenia is a transient phenomenon and is probably of no significant prognostic value. Recovery usually followed after treatment.

Thrombocytopenia is a key indicator for malaria in patients with acute febrile illness. This study will help in identification of malaria in different types of malaria.

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