

Original Article

Malaria can lead to Thrombocytopenia

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ABSTRACT

Objectives: To evaluate the effects of malaria on Platelet count.

Patients and Methods: This observational Study was carried out at the private clinic of author from January 2006 to December 2006. Two hundred and thirty six patients were positive for malarial parasite of the total 947 requests for slide examination. Of the total positive cases, 130 were positive for Plasmodium vivax, 102 were positive for Plasmodium falciparum, and 04 were having mixed infections (both vivax and falciparum). Platelet counts were done in 95 patients, (Plasmodium falciparum 55, Plasmodium vivax 36 and mixed 04). Full Blood Count, thick and thin smears were stained with Giemsa stain and were studied by hematologists.. Microsoft Excel was used for statistical analysis.

Results: In these 95 patients, platelet counts ranged 20,000 to 350,000/cmm with a mean value of 144,000/cmm. Fifty five (58%) patients had thrombocytopenia.

Conclusions: Malaria is usually associated with various degrees of thrombocytopenia. (Rawal Med J 2008;33:183-185).

Key Words: Thrombocytopenia, malaria, plasmodium.

INTRODUCTION

Malaria is a global health problem with an annual incidence of 300 million people with one million deaths.¹ The bulk of mortality is seen in infants. Those who survive to adulthood, acquire significant immunity with low grade parasitemia and few symptoms.² The pathology of malaria is related to anaemia, cytokine release,³ and in the case of P. falciparum, wide spread organ damage due to impaired microcirculation after blockade with red blood cells infected with parasite. Malaria is usually associated with various degrees of reduced blood counts. Though the anaemia is haemolytic in nature, the hemopoietic response is blunted, as evidenced by disproportionate reticulocytes counts, reduced platelets and WBC counts indicating some problem with manufacturing apparatus. Mild or moderate thrombocytopenia is a common association of malaria and is rarely associated with hemorrhagic manifestations or a component of disseminated intravascular coagulation.⁴⁻⁶

In most clinical studies, thrombocytopenia is not usually associated with mortality.⁵ The cause of thrombocytopenia is poorly understood, although increased platelet destruction is significant and platelet lifespan is reduced during malaria. It is often associated with palpable splenomegaly and circulating immune complexes.⁷ Tumor Necrosis Factor and IL-10 have been implicated in the development of *P. falciparum* malarial anemia, but the role of these cytokines has not been studied in the development of thrombocytopenia in patients with acute malaria.⁸ Aim of this study was to evaluate the effects on platelet counts of patients suffering from acute falciparum malaria.

PATIENTS AND METHODS

The study was conducted in the Private Clinic of author from January 2006 to December 2006. Malarial Parasite (MP) examination using thick and thin smears stained with Giemsa stain were requested for 947 patients suspected of malaria. Two hundred and thirty six patients were positive for MP. Of these, 130 were positive for *Plasmodium vivax* (PV), 102 were positive for *P. falciparum* (PF) and 4 were mixed infections (both vivax and falciparum). Full Blood Count was performed on ABX Micros and studied by hematologists. Platelet counts were done in 95 patients, (*P. falciparum* 55, *P. vivax* 36, Mixed 4). Microsoft Excel was used for data analysis.

RESULTS

Fifteen patients (15.8%) had platelet counts less than 50,000/cmm with more having low count. Thrombocytopenia (<150,000/cmm) was present in 58% of patients positive for malarial parasite (Table 1).

Table 1. Platelet counts in patients with malaria (n=95).

Platelet count/cmm	Number of patients	%age	Cumulative number	Cumulative %age
Upto 50,000	15	15.8	15	15.8
51,000-100,000	21	22.1	36	37.9
101,000-150,000	19	20	55	57.9
151,000-200,000	19	20	74	77.9
201,000-250,000	18	18.9	92	96.8

More than 251,000	03	3.2	95	100
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Mean of platelet counts in PF and PV were 161,000 and 118,000 with a p-value of <0.01 (Table 2).

Table 2. Platelets in PF and PV.

	Minimum (×1000/cmm)	Maximum (×1000/cmm)	Mean±SD
PF(n=55)	50	350	161±73*
PV(n=36)	20	264	118±61*

P<0.01

DISCUSSION

Thrombocytopenia often accompanies malaria and is usually mild to moderate and very rarely symptomatic. A 58% patients with malaria showing thrombocytopenia in our study is close to others reporting low platelets as 57%⁹ and 48%.¹⁰ Malaria is usually associated with various degrees of reduced blood counts. In Liberia Mahmood et al studied a total of 145 patients who had *P. falciparum* malaria. Out of these 109 (75.18%) had thrombocytopenia.¹¹ The sensitivity of the platelet count was considered as a predictor of malaria was 80.11% while specificity was 81.36%. The positive predictive value was 63.87% and the negative predictive value was 90.86%.⁴ He concluded an extended search for malarial parasite in patients having thrombocytopenia on smear. Mild to severe thrombocytopenia was observed in hospitalized patients, which should alert the possibility of malarial infection, as *P falciparum* was found to be common species in these patients.¹²

It is a general consensus that thrombocytopenia is very common in malaria^{13,14} and this is usually believed that it is more common in *F. malaria*. Contrary to the popular belief, *P. vivax* can give rise to thrombocytopenia^{15,16} as was seen in our study. In conclusion, we found significant thrombocytopenia in more than half of our patients with malaria, more so in *vivax* type. Therefore, malaria should be a consideration in febrile patients with low platelets.

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