

MALARIA: RECENT TRENDS MANIFESTED AS THROMBOCYTOPENIA**Dr. Anil Rajani*¹, Dr. Kishore Khatri², Dr. Kusum Vaishnav³**

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ABSTRACT:

Objective: Malaria continues to be a cause of high mortality and morbidity in India and is commonly associated with mild hematological abnormalities. Yet the physicians, when evaluating patients for fever, frequently missed the diagnosis of malaria. We evaluated the role of platelet counts for predicting malaria infection. **Materials & methods:** It was a retrospective study. The study included patients came with complaint of fever and investigated at laboratory of M.G. hospital, Jodhpur and Army hospital, Jodhpur. **Results:** The mean platelet counts among non malarial patients were much higher than malaria positive group. On statistical analysis this difference was also found significant ($p < 0.001$). **Conclusion:** Our study concluded that a finding of thrombocytopenia should increase the suspicion of malaria and lead to performance of more specific tests, including multiple peripheral smears and ELISA for parasite-specific antigen etc.

KEYWORDS: fever, malaria, thrombocytopenia.

INTRODUCTION:

Malaria continues to be a cause of high mortality and morbidity throughout the developing countries. In India the success of National malaria control programme (NMCP) was so impressive that the Govt. of India in the ministry of health changed the malaria control programme into National Malaria Eradication programme (NMEP). But the incidences of malaria, in spite of good care, increased. So the Govt. of India again reviewed the programme and changed it into Modified Plan of Operation (1). Now the

malaria control strategies are under National Vector Borne Disease Control Programme (NVBDCP).

Physicians often missed the diagnosis of malaria. Clues obtained from peripheral blood smears are very helpful. An attempt is made to evaluate the role of platelet counts as a marker for predicting malaria infection. Thrombocytopenia has been reported to be associated with malaria, with incidences ranging 40.5% (2) - 80% (3, 4). The occurrences of thrombocytopenia during clinical

course of *P.falciparum* malaria has been consistently reported in different series (5,6). However thrombocytopenia is infrequently reported for *P.vivax* malaria (7). Our study shows that thrombocytopenia is also associated with *P.vivax* malaria as well.

MATERIAL AND METHODS

This was a retrospective study done at M.G Hospital, Jodhpur, attached part of Dr. S.N Medical College, Jodhpur and Army hospital, Jodhpur.

The study protocol included all patients seen between July 2015 to October 2015, who presented with fever and tested for malaria either by slide or by card test. Patients were divided

into two groups- malaria positive group and non-malaria group. Thick and thin smear, using geimsa stain, was used to detect malaria parasite on peripheral smear. A patient was considered not to have malaria if three consecutive smears were negative and MP card test was negative.

Platelet counts were obtained from each patient. Above 1, 00,000 cell/ μ l were considered as adequate. Thrombocytopenia was considered severe if platelet counts were $< 40,000/\mu$ l and moderate if platelet counts were between 40,000-1, 00,000 cells/ μ l. The non-malaria group served as control.

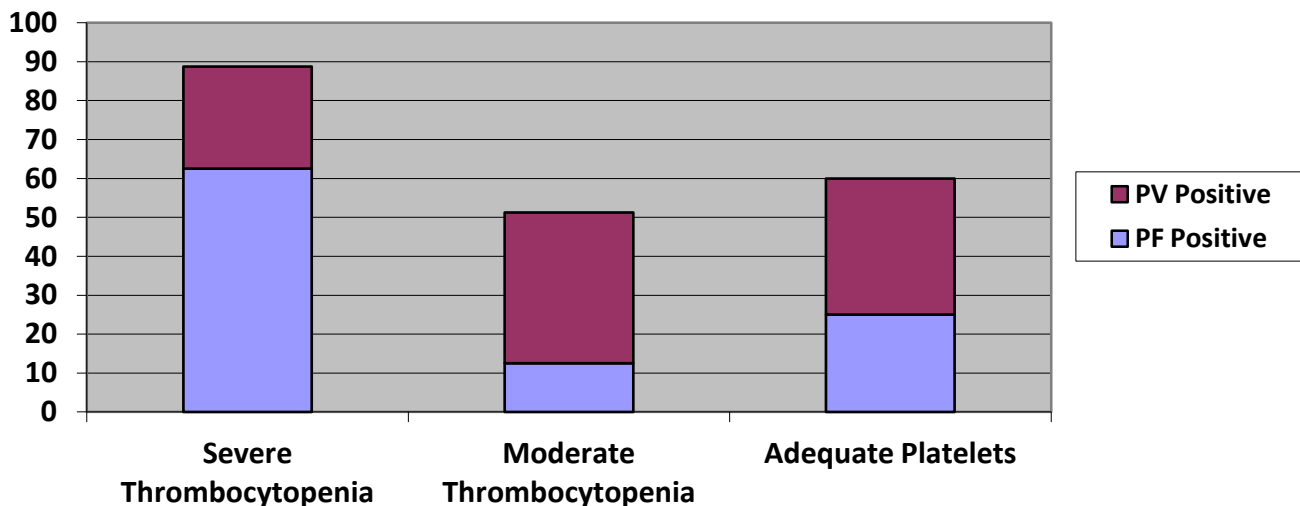
RESULTS:

Table 1: Characteristics of Malaria with Thrombocytopenia among Study Group

Thrombocytopenia MP	Thrombocytopenia present (platelets < 1 lac/ μ l)	Thrombocytopenia absent (platelets > 1 lac/ μ l)	Total
MP Positive	58	30	88
MP Negative	06	82	88
Total	64	112	176

Table 2: Platelet Counts in Malaria Group with Species *P.Falciparum* & *P.Vivax*

Thrombocytopenia MP	Severe Thrombocytopenia (platelets $< 40,000/\mu$ l)	Moderate Thrombocytopenia (platelets = 40,000-1 Lac/ μ l)	Platelets Adequate (platelets $>$ 1Lac/ μ l)	Total
PF Positive	05 (62.5%)	01 (12.5%)	02 (25%)	08
PV Positive	21 (26.25%)	31 (38.75%)	28 (35%)	80
Total	26 (29.54%)	32 (36.36%)	30 (34.09%)	88

Figure 1: Occurrence and Severity of Thrombocytopenia in P.Falciparum and P.Vivax Cases

Total 176 patients were studied. Among them 88 patients were in malaria-group and 88 patients were kept in control group (non-malaria group). In malaria positive group 58 patients (65%) were presented as thrombocytopenia and in control group 06 patients (only 6.81%), were found with thrombocytopenia in complete blood counts. Patients with falciparum malaria were found to have lower platelet counts than patients with vivax malaria.

In malaria positive group platelets count ranged from 2×10^3 cells/ μ l to 267×10^3 cells/ μ l with a mean of 86×10^3 cells/ μ l. Standard deviation for malaria positive group was calculated as 63×10^3 cells/ μ l and mean deviation was 47×10^3 cells/ μ l. In control group mean platelet counts were 227×10^3 cells/ μ l and standard deviation was 115×10^3 cells/ μ l calculated. Standard error between means of malaria positive group and control group was 13.98×10^3 cells/ μ l but the actual difference between means of those were 147×10^3 cells/ μ l. Actual difference between mean was far greater than twice of

standard error between mean (27.96×10^3 cells/ μ l). So this shows a significant difference between platelet counts of malaria positive group and control group.

We also applied chi square test on our data. In published probability table on referring to Chi square table, with 1 degree of freedom, the value of Chi square for probability of 0.001 is 10.83. Since the observed value (66.37) is far greater than table value (10.83) we concluded that the null hypothesis is false and that thrombocytopenia in malaria positive group is significant ($P < 0.001$).

DISCUSSION

Detection of malaria parasite in peripheral smear is gold standard for diagnosis of malaria. But it is time consuming and needs expertise, especially to detect the parasite at low level of parasitemia.

The study found thrombocytopenia, defined as platelets counts less than 1, 00,000 cells/ μ l to be a highly sensitive test for this disease, with a

very high negative predictive value. Thrombocytopenia should increase the suspicion of malaria, and multiple peripheral smears or a more sensitive test like ELISA for detection of parasite specific antigen levels should be performed.

A normal platelet counts in such circumstances may suggest a broader differential diagnosis for the fever. We propose that the platelet counts can serve as an important initial screening tool in this setting.

The mechanism of thrombocytopenia in the malaria is not clearly known. Fajardo and Tallent (8) suggest direct lytic effect of parasite on platelets. Both non-immunological destruction (9) as well as immune mechanism by specific Ig-G antibodies has been recently reported (10). In clinical trials elevated M-CSF levels in malaria, by increasing macrophage activity have been reported as a cause of platelets destruction (11).

CONCLUSION

This study shows that in patients with acute febrile illness and with marked thrombocytopenia, malaria should also be kept in mind as differential diagnosis and treated accordingly.

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