ORIGINAL ARTICLE

INCIDENCE AND PROGNOSTIC SIGNIFICANCE OF THROMBOCYTOPENIA IN MALARIA

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HOW TO CITE THIS ARTICLE:
G. Vijaya Kumar, D. Bala Subrahmanyam, K. Hemanth Kumar. "Incidence and Prognostic Significance of Thrombocytopenia in Malaria". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 10, March 09, 2015; Page: 1431-1435.

ABSTRACT: Malaria remains one of the major health problems in the tropics with increased morbidity & mortality. Thrombocytopenia is a common finding in malaria, but its correlation with the type of malaria and prognostic implications in context with severity of low platelet count has not been evaluated in large studies. In view of paucity of data from Indian studies, we attempt to correlate the low platelet count with type of malaria and outcome. **OBJECTIVES:** To study the incidence of thrombocytopenia in malaria. To correlate the severity with type of malaria and its prognostic significance

KEYWORDS: Malaria; Thrombocytopenia; complications.

INTRODUCTION: Malaria is probably one of the oldest diseases known to mankind that has had profound impact on our history. The Vedic (3,500 to 2,800 years ago) and Brahmanic (2,800 to (1,900 years ago) scriptures contain references to fevers, some of which almost appear to be malaria. The reference about malaria is found in Athava Veda (c.1500 BC).Even Charaka and Susruta have described variants of malarial fevers.

Malaria was linked with poisonous vapours of swamps or stagnant water on the ground since time immemorial. This probable relationship was so firmly established that it gave the two most frequently used names to the disease mal'aria, later shortened to one word malaria, and paludisme. The term malaria (from the Italian mala "bad" and aria "air") was used by the Italians to describe the cause of intermittent fevers associated with exposure to marsh air or miasma. The word was introduced to English by Horace Walpole, who wrote in 1740 about a "horrid thing called mal'aria, that comes to Rome every summer and kills one." The term malaria, without the apostrophe, evolved into the name of the disease only in the 20th century.

Up to that point the various intermittent fevers had been called jungle fever, marsh fever, paludal fever, or swamp fever.

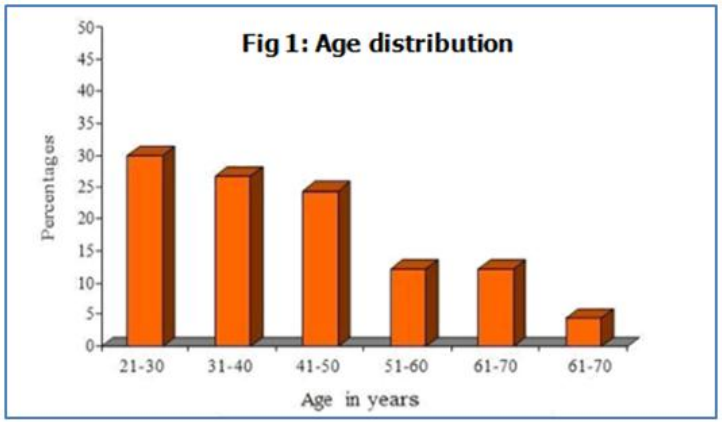
Malaria affects around 3.4 billion people world-wide, 2.2 billion people are at low risk of this 94% live in other than Africa. 1.2 billion people with high risk (>1/1000 persons) (47%) in Africa region and (37%) in South-East Asian region. Malaria seen in 97 countries.

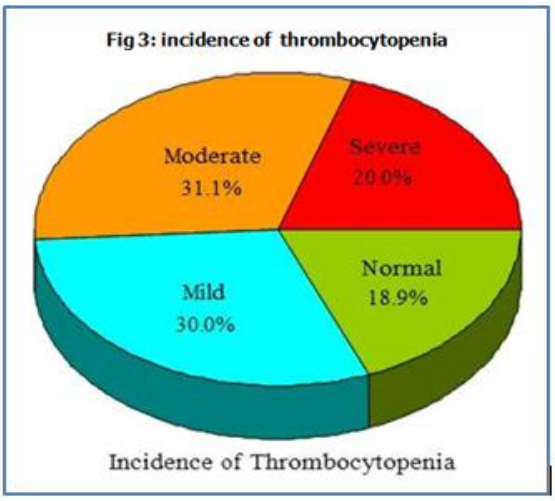
METHODS: A total of 90 patients diagnosed to have Malaria over a period of one year admitted in Santhiram hospital were studied. All study subjects were identified positive for Malaria parasite on peripheral smear examination with conventional microscopy. Platelet count was done on a fully automated, quantitative analyzer. Daily platelet count was done for all those admitted with malaria. P. falciparum antigen test (PfHrp antigen test-Parascreen) was performed in subjects with P. vivax Malaria on the peripheral smear with a platelet count less than 20,000 cells/cmm for

more emphatic exclusion of associated P.falciparum infestation. P.falciparum antigen test was also performed in subjects with high index of clinical suspicion or multi organ involvement.

RESULTS: In our study, a total of 90 patients were found to have malaria, 57(63.3%) were P. vivax, 31 (34.4%) were P. falciparum and 2(2.7%) were mixed. 73(81.1%) patients had thrombocytopenia. 17(23.3%) developed complicated malaria. Severe thrombocytopenia was noted in 58.8% of complicated malaria with $p<0.001$. 10 patients persisted to have thrombocytopenia on 6th day even after adequate therapy. 7(70%) patients out of 10 recovered and 3(30%) died in which one was P. falciparum and 2 were mixed infection.

INTERPRETATION AND CONCLUSION: Thrombocytopenia is a common association of malaria with incidence of 81.1%. Severe thrombocytopenia is commonly seen in P. falciparum. Platelet count <25,000 was not seen in P. vivax. Out of 18 severe thrombocytopenia 17 developed complicated malaria with significant p value indicating that patients with severe thrombocytopenia at the time of admission are 8.5 times more prone to develop complications when compared to mild and moderate thrombocytopenia. Patients who persisted to have thrombocytopenia even after 6th day of therapy, their mortality increased by 30%.





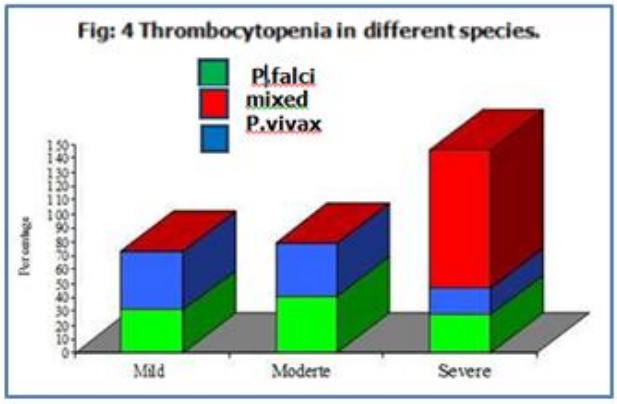


Fig: 4 Thrombocytopenia in different species.
P.falci
mixed
P.vivax
Mild
Moderte
Severe

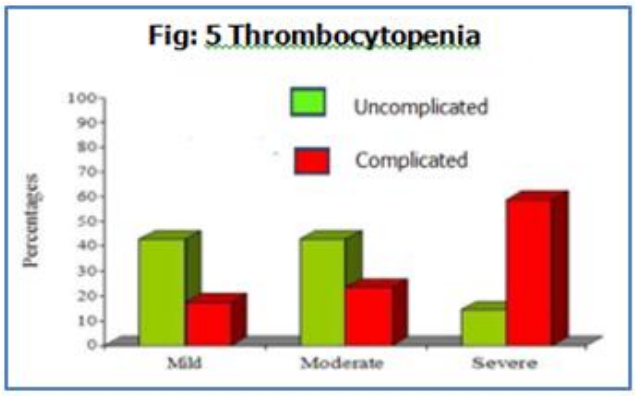


Fig: 5 Thrombocytopenia
Uncomplicated
Complicated
Percentages
Mild
Moderate
Severe

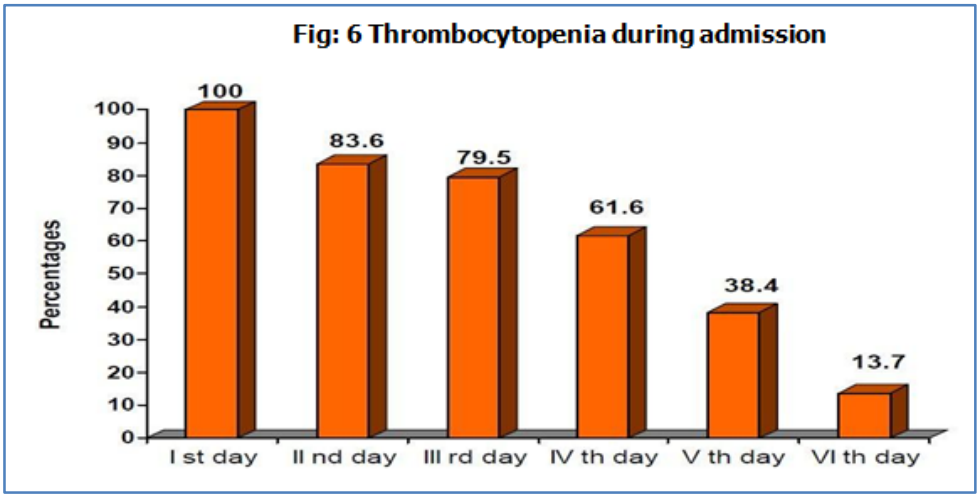


Fig: 6 Thrombocytopenia during admission
Percentages
100
83.6
79.5
61.6
38.4
13.7
I st day
II nd day
III rd day
IV th day
V th day
VI th day

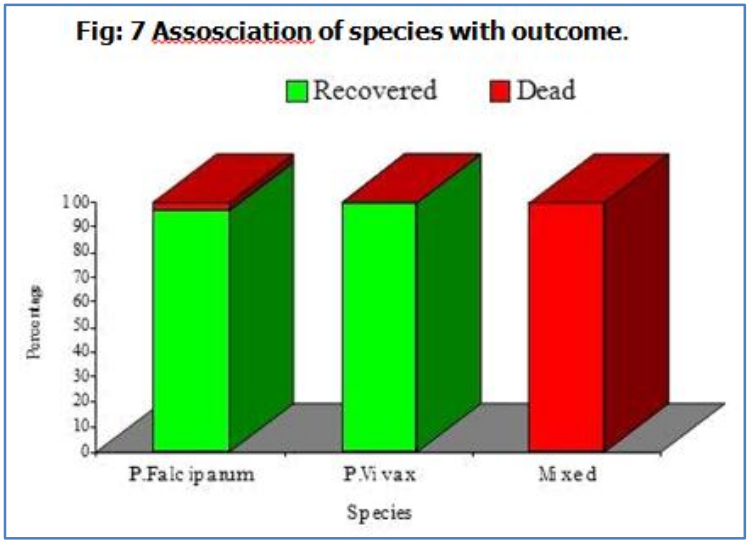


Fig: 7 Assosciation of species with outcome.
Recovered
Dead
P.Falciparum
P.Vivax
Mixed
Species

DISCUSSION: In this study 73 subjects out of 90 malaria cases had thrombocytopenia. Incidence of thrombocytopenia being 81.1%.[1] Thrombocytopenia is a common feature of acute malaria and occurs in both P.falciparum and P.vivax infection regardless of severity of infection. Thrombocytopenia in a patient with febrile illness increases the possibility of malarial infection.[2]

Out of 90 cases 57 had P.vivax malaria, 31 patients had P.falciparum, and 2 had mixed infection. Incidence of P.vivax malaria is 63.3% and P.falciparum 34.4%.[3,4] Prevalence of P. vivax malaria is common in India, because of variation in climatic condition, breeding places of mosquito and genetic resistence of P.falciparum.[4]

When thrombocytopenia is co-related with severity of malaria, severe thrombocytopenia was commonly associated with complicated malaria (58.8%) as compared to 22 uncomplicated malaria (14.3%).[5] Maximum thrombocytopenia occurred on third and fourth day of infection and gradually returned to normal by fifth to sixth day[1]. Those persisted to have severe thrombocytopenia beyond 6th day, their mortality and morbidity increased despite of adequate therapy.

Patients who had severe thrombocytopenia at the time of admission are 8.5 times more prone to develop complications when compared to mild and moderate thrombocytopenia based on student 'T' test. In this study 10 patients had severe thrombocytopenia beyond 6 day, 7 recovered within 7 to 10 days, 3 died with an increase in mortality rate from 4.1% to 30%[5,6], of which 1 was P. falciparum and 2 were mixed infection.

CONCLUSION:

- Thrombocytopenia is a common association of Malaria.
- Severe thrombocytopenia (platelet count<20,000) is seen in P. falciparum, uncommon in P. Vivax malaria.
- Severe thrombocytopenia is a good predictor of poor prognosis than mild and moderate thrombocytopenia.
- Patients who present with severe thrombocytopenia are 8.5 times more prone to develop complications than mild and moderate thrombocytopenia.
- If severe thrombocytopenia persists for more than six days despite of adequate therapy, mortality rate increases from 4.1% to 30%.

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Date of Submission: 14/02/2015.
Date of Peer Review: 15/02/2015.
Date of Acceptance: 26/02/2015.
Date of Publishing: 04/03/2015.