

FREQUENCY OF THROMBOCYTOPENIA IN CHILDREN SUFFERING FROM MALARIA

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ABSTRACT

Introduction: Fever is one of the oldest known patient's complaints written in literature. A large number of our OPD patients come with complaint of fever. Malaria is one of major causes of fever without focus. It is endemic in Pakistan. More than 80% of our population is at risk for getting malaria. Most of the cases of malaria are diagnosed and treated on the bases of clinical judgement. There are a multiple hematologic derangements, like anaemia and thrombocytopenia, which are commonly associated with malaria. Most of the tests used to support our diagnosis are operator dependant. Therefore it is always desirable to have a mean which support our suspicion of malaria and that is not operator dependant.

Material and Methods: This was just an observational study which was done on malria patients presenting to the OPD and emergency department of Naseer Teaching Hospital, from 1st April 2015 to 29th October 2015.

Results: A total of 100 cases were enrolled for the study, after fulfilling the inclusion exclusion criterion. Out of which 58 were male and 42 were female. Mean age of the patient was 6.93 ± 3.86 , mean haemoglobin was 9.52 ± 2.21 , and mean platelets count was $1.02 \times 10^3 / \text{micoliter} \pm 74232.69$.

Conclusion: We did this study on a limited no of patient. Therefore we strongly request more such studies on large scale to establish the role of thrombocytopenia as an indicator of malaria. Moreover we strongly negate the thinking to consider it as an alternative to the more specific diagnostic modalities like thick and thin smear. We simply found that thrombocytopenia is significantly associated with malaria, and we recommend to consider it for further research.

Keywords: Fever, Literature, Malaria, Thrombocytopenia, Anaemia, Population.

INTRODUCTION

Fever is one of the oldest known patient's complaints written in literature. A large bulk of our patients presenting to OPD and emergency complain of fever. A wide range of illnesses present with fever.¹

Malaria is one of major causes of fever without focus. It contribute significantly to the global mortality and morbidity.² According to the "World Malaria Report 2008: A Billion-dollar Moment for a Centuries Old Disease?" half of the world population is at risk of acquiring malaria.³ In 2006 247 million cases of malaria were reported worldwide, of which 881,000 died. 85% of total deaths were in children of age less than 5 years.³ 4% of deaths were in south-east asia.⁴

It is endemic in Pakistan. Peak incidence occurs in rainy season from July to November. Most of our rural population sleep under the open sky. They do not use mosquito nets or any other mosquito repellent. More than 80% of our population is at risk for getting malaria.²

Although according to WHO malaria should be diagnosed by performing peripheral smear for malarial
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parasite. Most of the cases of malaria are diagnosed and treated on the bases of clinical judgement.² There are multiple hematologic derangements, like anaemia and thrombocytopenia, which are commonly associated with malaria.⁵ Our country is poor. Expert haematologists are scares in our country. Most of the tests used to support our diagnosis are operator dependant. Therefore it is always desirable to have a mean which support our suspicion of malaria and that is not operator dependant.

There are studies in literature which correlates thrombocytopenia to malaria.^{5,6} We did this study, as a local effort to fulfil their urge of more such studies in different areas of the world. It will help us a lot if we can successfully correlate thrombocytopenia to malaria. Automated CBC machines are available in most of the area of our country, which gives accurate platelet count. It will help us a lot, because expert haematologists are scares in our country.

MATERIAL AND METHODS

Study Design: observational study

Setting: The study was carried out by all children suffering from malaria, who presented to the OPD or emergency department of naseer teaching Hospital, Peshawar.

Duration of study: The study was carried out from 1st April 2015 to 29th October 2015.

Sample size: a total of 100 patients were selected.

Sampling Technique: Non-probability consecutive sampling

SAMPLE SELECTION

Inclusion criteria: all children suffering from malaria, who present to Naseer Teaching Hospital, may be OPD or ward.

- Age one month to 15 years
- Malaria positive by slide method, may be any type of plasmodium.
- Stable vitals, in the normal ranges for different ages, at presentation

Exclusion criteria

- Patient suffering from any other coexisting condition which causes thrombocytopenia like ITP etc
- Patient with unstable vitals, which needs ICU care or blood transfusion
- Acute severely malnourished children, having bilateral pedal oedema, or severe wasting e.g., weight for height/length < -3SD, mid upper arm circumference < 11.5cm

- Sepsis or any other focus of infection
- Any inflammatory, rheumatologic or other associated condition which interfere with platelet count

Data collection: after assessing for inclusion exclusion criteria and taking informed consent from the parents, two blood samples were taken from all the patient who were suspected to be malaria positive. Both samples were sent to the laboratory of Naseer teaching hospital, one for CBC by sysmac, and the other for MP by slide method. Results were collected by the researcher. Only those patients results were analyzed who were MP positive by slide method, may be any type of plasmodium.

Statistical analysis: Data was analysed by SPSS version 16. Categorical variables were presented as frequencies and percentages. Continuous/numerical variables were presented as mean±SD.

RESULTS

A total of 100 cases were enrolled for the study, after fulfilling the inclusion exclusion criterion. Out of which 58 were male and 42 were female. Mean age of the patient was 6.93±3.86, mean haemoglobin was 9.52±2.21, and mean platelets count was 1.02×10³/micoliter±74232.69.

Table 1: Age, haemoglobin level and platelets count of patient.

Variable	Minimum	maximum	Mean	Std.deviation
Age of patient in years	1.00	14.00	6.925	3.858
Haemoglobin	5.00	14.00	9.52	2.215
Platelets count	23000	367000	102000	74232.69

Table 2: Male, female ratio.

Variable	Frequency	Percent
Male	58	58
Female	42	42
Total	100	100

DISCUSSION

In this study we observed that thrombocytopenia is significantly associated with malaria. We observed that 86% of our patient were thrombocytopenic, and only 14% have normal platelet count. Out of these 86%, 33% had platelets count in the range of 50000-75000, 34% have platelets count in the range of 76000-100000, 7% had platelets count in the range of 100001-150000, and 12% had platelets count less than 50000. Kaushik JS, Gomber S, Dewan P. also observed thrombocytopenia in 70.8% of patients suffering from severe vivax malaria⁷.

We also observed that males suffered more frequently than females. Out of total 100 patients 58%

were male and 42% were females. This may be because of our social traditions and religious responsibilities, that females covers themselves more than males, and therefore less frequently bitten by mosquitoes.

Our study results are different than Kalinowska-Nowak A, Bociaga-Jasik M, Leśniak M, Mach T, Garellicki A, both in the presence of thrombocytopenia and male/female ratio. They observed thrombocytopenia in 54%, while we observed in 86%, while the male/female ratio was strangely more than ours. In their study 79% of the patient were male and only 21% were females. This may be because they studied only travellers. And we know that males used to travel more than females⁸ Our this finding is also different from that of K. A. Kanani, Z. S. Amr, R. Alkhatib, B. Shadfan, M. Al-

Rashadan, R. B. Hanı Who observed malaria in 91.78% males and only 8.22% females, but again they studied travellers and most of their patients were older than 21 years. While we studied children in whom the traditions for covering body is not that much different.⁹

Although in this study we did not evaluated the association of thrombocytopenia separately with different species of plasmodia, but it was associated with all types of plasmodia. It is same finding as that of Ragini Singh, Shruti Kumar, S.K. Rana, Brijesh Thakur, and S.P. Singh who also found that thrombocytopenia was the commonest finding in both vivax and falciparum malaria¹⁰

Our study results are more closely like those of Malik AM, Zaffar N, Ali N, Malik AM, Khan R., who observed thrombocytopenia in 70% of patients suffering from malaria. More over in their study the male/female ratio was also closure to ours. They observed male/female ratio of 1.36, which is similar to ours 1.38(58/42). Their study was also performed in Pakistan. Our results are nearly similar because of similarity of our study population.¹¹

We did this study on a limited no of patient. Therefore we strongly request more such studies on large scale to establish the role of thrombocytopenia as an indicator of malaria. Moreover we strongly negate the thinking to consider it as an alternative to the more specific diagnostic modalities like thick and thin smear. We simply found that thrombocytopenia is significantly associated with malaria, and we recommend to consider it for further research.

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