

Clinical Profile of Plasmodium Vivax Malaria in Pediatric PatientsRakesh Kumar¹, Satish Kumar², Prem Praksh³¹Senior Resident, Department of Paediatrics, GMCH, Purnea²Senior Resident, Department of Paediatrics, GMCH, Purnea³Assistant Professor & Head, Department of Paediatrics, GMCH, Purnea

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Abstract:

Background and Objectives: *P. vivax* malaria has long been considered to have a benign course with multiple relapses. The typical complications seen in *P. falciparum* malaria are not usually found in *P. vivax* mono-infections. However, during the past few years, to study clinical presentations and complications of *P. vivax* malaria.

Methods: A prospective hospital-based clinical observational study was conducted on 100 patient's under age of 14 years were enrolled in the study. Study duration is July 2022 to July 2023.

Result: The most common presentation was fever followed by pallor. Among the total of 100 cases studied 2 cases died with a case fatality rate of 2%. Among the total of 100 cases studied 5 cases (10%) required ICU admission.

Conclusion: *P. vivax* mono-infection tends to have severe complications in children. There is a need to review severity criteria for *P. vivax* malaria.

Keywords: Vivax, Fever, ICU.

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Introduction

Four countries account for more than 80% of estimated cases of *P. vivax* cases (Ethiopia, India, Indonesia, and Pakistan). India alone contributes 80% of southeast Asia malaria burden. The risk of severe *P. vivax* disease in residents of endemic areas has been observed to rise with increasing transmission intensity, although the contribution of less access to care and more comorbidity in these settings is not well quantified. As a result of the slower rate of decrease in the incidence of *P. vivax*, many malaria control programs that are moving towards elimination need to give greater attention to the control of *P. vivax*, particularly in countries outside sub-Saharan Africa. Indeed, *P. vivax* predominates in countries in the pre-elimination and elimination phases. [1] *P. vivax* malaria has long been considered to have a benign course with multiple relapses. The typical complications seen in *P. falciparum* malaria are not usually found in *P. vivax* mono-infections. However, during the past few years, the trend in the clinical manifestations of *P. vivax* malaria has been changing. Several isolated studies from India have reported severe complicated cases of *P. vivax* malaria. [2-3]

Although this type of malaria is an enormous burden of disease, research about the disease is scarce probably because of it being considered benign malaria compared to *P. falciparum* malaria. However, with implementation of molecular diagnosis, it has become evident that *P. vivax* mono-infection could

also be involved in multiple organ dysfunction and severe life-threatening disease as seen in *P. falciparum* infection [4]

Material and Methods

A prospective hospital-based clinical observational study was conducted on 100 patient's under age of 14 years were enrolled in the study. Department of Paediatrics, at Government medical college and Hospital Purnea, Bihar. Study duration is July 2022 to July 2023.

Inclusion Criteria

1. Children in age group of below 14 years.
2. Peripheral smear or rapid malaria antigen test (RMAT) positive for Plasmodium vivax malaria.
3. Availability of a written informed consent.

Exclusion Criteria

1. Nonavailability of consent.
2. Peripheral smear positive for *P. falciparum* or positive for both *P. falciparum* and *P. vivax*.
3. Patient presenting with fever (malarial parasite negative on peripheral smear and/or RMAT negative) but treated empirically like malaria.

Diagnosis

The diagnosis and confirmation of species of *P.*

falciparum and *P. vivax* malaria were established by thick and thin film of peripheral blood smear examination under oil immersion with Giemsa stain and RDT. The RDTs were based on detection of specific *Plasmodium* spp. lactate dehydrogenase and histidine-rich protein.

Data Collection and Analysis

Data regarding patient age, sex, clinical presentation, investigations, and outcome were recorded.

Patients were categorized in severe and nonsevere group based on WHO guidelines for classification of severe malaria. Chi square test was performed to test statistical significance of sex distribution in different age buckets. Prevalence of symptoms, signs, severity criteria, lab parameters, and their relation to mortality were studied.

Results

Table 1: Demographic profile

Age	9.12± 3.26 Yrs
Male : Female	64 : 36

Table 2: Clinical profile

Fever	96 (96.00%)
Pallor	32 (32.00%)
Oedema	2 (2.00%)
Body ache	3 (3.00%)
Respiratory symptoms	35 (35.00%)
Gastrointestinal symptoms	37 (37.00%)
CNS symptoms	6 (6.00%)

Table 3: Distribution of organomegaly among total cases

Organomegaly	Number	Percentage (%)
Hepatomegaly	10	10.0%
Splenomegaly	10	10.0%
Hepatosplenomegaly	50	50.0%
No hepatosplenomegaly	30	30.0%

Among the total of 100 cases studied 2 cases died with a case fatality rate of 2%. Among the total of 100 cases studied 5 cases (10%) required ICU admission.

Discussion

Males were more affected than females, which is possibly due to increased outdoor activity and increased exposure to mosquitoes in males as compared to females. Kochar et al. found similar results in their study with 33.0% females affected among cases of *P. vivax* malaria. Age distribution among various age groups was 33.9% in 0–5 years, 30.1% in 5–10 years, and 30% in >10 years, which was almost similar in all age groups. [6] A study done, studied population of 1 to 12 years which shows 59.7% males and 40.3% females having *P. vivax* malaria, as compared to our study which shows 69% males and 31% females having *P. vivax* malaria in similar age group of 1 to 12 years [7] The most common presentation was fever, present in 96 out of total of 100 cases (96%). High fever trends are evident in *P. vivax* disease even with lower parasitemia due to its recognized lower fever threshold (around 100 infected RBCs/microliter). [8] It was followed by pallor which was present in 32 cases (64.00%). Two common causes of anemia are increased hemolysis and decreased rate of

erythrocyte production from bone marrow whereas the malnutrition and intestinal parasitic infections aggravate this problem in highly endemic areas. In a study about 50% of patients with *P. falciparum* and mixed infections were anemic while 29% of *P. vivax* infected cases had this abnormality [9] Major confounding factors in the global analysis of anemia are the local contributors to this hematological complication such as iron-deficiency anemia [10]

Conclusion

P. vivax monoinfection tends to have severe complications in children. There is a need to review severity criteria for *P. vivax* malaria.

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