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ORIGINAL ARTICLE

Assessment of cases of malaria in children

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ABSTRACT:

Background: Malaria is prevalent in tropical and subtropical regions, with Africa and Southeast Asia having the greatest prevalences. The present study was conducted to assess cases of malaria in children. **Materials & Methods:** 84 cases of malaria in children of either gender were enrolled. Laboratory tests, such as hemoglobin, total leucocyte count, platelet count, bleeding time, clotting time, blood sugar, blood urea, S. creatinine, total serum bilirubin (direct and indirect), SGPT, and SGOT, were performed in addition to peripheral blood film and quick diagnostic testing. **Results:** There were 56 cases of P. vivax and 28 cases of P. falciparum. Age group 0-5 years had 9 and 5, 5-10 years had 11 and 8 and age group >10 years had 36 and 15 patients respectively.Among P. vivax (56) and P. falciparum (28) cases, severe malaria was seen in 63% and 78%, S. Anemia (Hb<5) in 10% and 26%, thrombocytopenia (<1 lakh) in 65%and 57%, thrombocytopenia (<50,000) in 35% and 43%, pancytopenia in 52% and 59%, leucoytopenia in 18% and 15%, CNS manifestations in 27% and 34%, ARDS in 8%and 9%, deranged LFT in 6% and 21% and deranged RFT in 9% and 22% children respectively. The difference was significant (P< 0.05). Age group 5-10 years showed 2 and 1 and >10 years had 3 and 2 mortalities in P. vivax and P. falciparum group. The difference was non- significant (P> 0.05). **Conclusion:** P. vivax was a significant contributor to the morbidity and fatality rates from malaria in children. Compared to falciparum, vivax is far more prevalent.

Keywords: Malaria, P. falciparum, P. vivax

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INTRODUCTION

Malaria is prevalent in tropical and subtropical regions, with Africa and Southeast Asia having the greatest prevalences. With 24 million cases annually, India bears 80% of the malaria burden in Southeast Asia.[1] The bulk of P. vivax infections occur in India, whereas P. falciparum infections are common in Africa. varied regions of India have varied ratios of P. vivax to P. falciparum. Less than 10% of P. falciparum is found in the majority of the Indo-Gangetic plains, northern hilly regions, northwestern India, and southern Tamil Nadu.[2] P. falciparum is found in as much as 30% to 90% of the forested area that is home to ethnic tribes, but it ranges between 10% and 30% in the remaining area. Nonetheless, P. falciparum is the subject of a large portion of studies and publications.[3]

It has long been believed that vivax malaria had a benign course with several relapses. In vivax mono-infections, the regular sequelae observed in falciparum malaria are not typically present.[4] Nonetheless, the pattern of vivax malaria's clinical symptoms has been shifting in recent years. Severe difficult instances of vivax malaria have been documented in a number of isolated investigations from Papua New Guinea, Indonesia, and India.[5] Despite its low parasite biomass, enhanced deformability of infected red blood cells, and apparent lack of parasite sequestration, P. vivax is now also being identified as a key cause of severe and deadly malaria. Throughout the year, malaria cases are most common during the monsoon season, which lasts from July to October.[6]The present study was conducted to assess cases of malaria in children.

MATERIALS & METHODS

The study was carried out on 84 cases of malaria in children of either gender. All parents gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Conventional diagnostic techniques were employed. Thin and thick Leishman stain-stained peripheral smear analyzed in an oil immersion environment. When there were no parasites in 100 HPF, the slide was deemed negative. Rapid diagnostic tests relied on the identification of particular plasmodium antigens, HRP2 for falciparum and LDH (optimal test) for vivax. Other laboratory tests, such as hemoglobin, total leucocyte count, platelet count, bleeding time, clotting time, blood sugar, blood urea, S. creatinine, total serum bilirubin (direct and indirect), SGPT, and SGOT, were performed in addition to peripheral blood film and quick diagnostic testing. Where necessary, additional suitable blood tests and CSF examinations were performed.Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Age wise distribution of patients

Age group (years)	P. vivax (56)	P. falciparum (28)
0-5	9	5
5-10	11	8
>10	36	15

Table I shows that there were 56 cases of P. vivax and 28 cases of P. falciparum. Age group 0-5 years had 9 and 5, 5-10 years had 11 and 8 and age group >10 years had 36 and 15 patients respectively.

Table II Assessment of parameters

Parameters	P. vivax (56)	P. falciparum (28)	P value
Severe malaria	63%	78%	0.91
S. Anemia (Hb<5)	10%	26%	0.05
Thrombocytopenia (<1 lakh)	65%	57%	0.84
Thrombocytopenia (<50,000)	35%	43%	0.15
Pancytopenia	52%	59%	0.95
Leucoytopenia	18%	15%	0.36
CNS manifestations	27%	34%	0.42
ARDS	8%	9%	0.90
Deranged LFT	6%	21%	0.01
Deranged RFT	9%	22%	0.02

Table II, graph I shows that among P. vivax (56) and P. falciparum (28) cases, severe malaria was seen in 63% and 78%, S. Anemia (Hb<5) in 10% and 26%, thrombocytopenia (<1 lakh) in 65% and 57%, thrombocytopenia (<50,000) in 35% and 43%, pancytopenia in 52% and 59%, leucoytopenia in 18% and 15%, CNS manifestations in 27% and 34%, ARDS in 8%and 9%, deranged LFT in 6%and 21% and deranged RFT in 9% and 22% children respectively. The difference was significant (P< 0.05).

Graph I Assessment of parameters

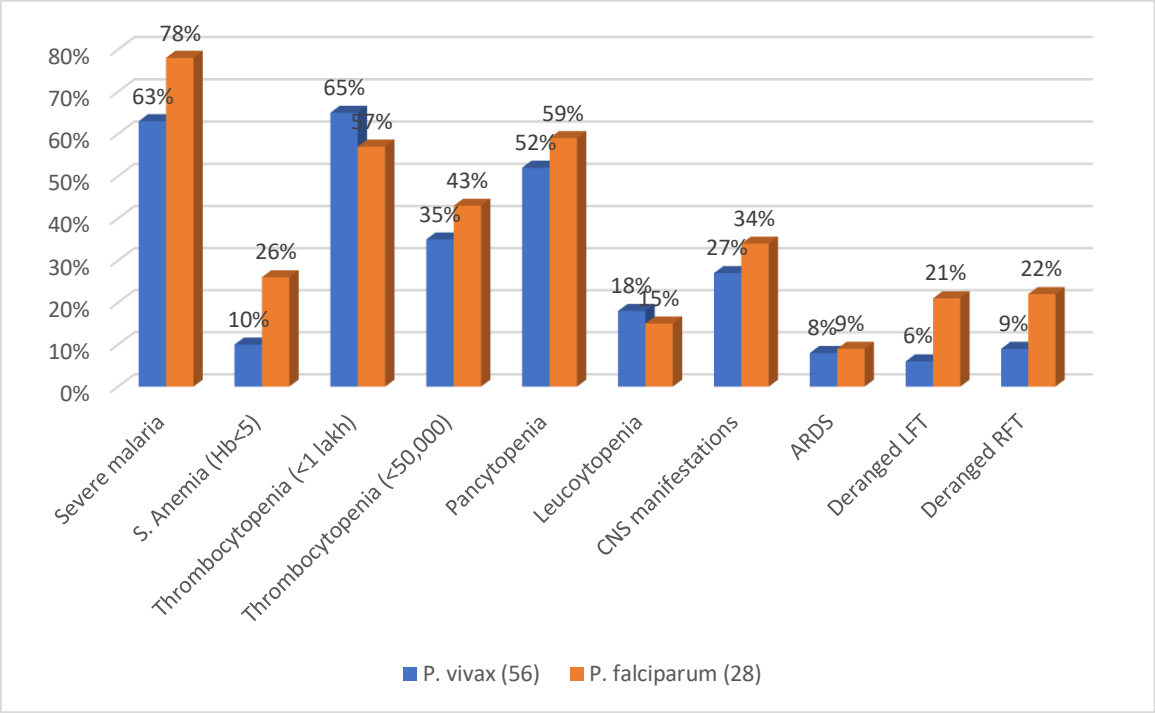

Table III Mortality rate

Age group (years)	P. vivax (56)	P. falciparum (28)	P value
0-5	0	0	0.47
5-10	2	1	
>10	3	2	

Table III shows that age group 5-10 years showed 2 and 1 and >10 years had 3 and 2 mortalities in P. vivax and P. falciparum group. The difference was non- significant (P> 0.05).

DISCUSSION

Malaria remains one of the most important parasitic infections in the world, with almost 225 million cases of infection and 0.78 million deaths in 2009, mainly in Africa, Asia and South America.[7] Plasmodium vivax is the second most common cause of malaria in the world after Plasmodium falciparum, moreover, P. vivax has a wider geographical distribution, where more people are at risk of infection (2.85 billion), and it is more difficult to control because of the hypnozoite forms of the parasite.[8] Recent reports on P. vivax infections suggest that this parasite may be evolving and adapting to new epidemiological contexts, becoming not only more virulent but also more frequent in countries where the incidence has traditionally been low. Furthermore, it has been shown that P. vivax is able to infect even Duffy-negative African patients.[9,10]The present study was conducted to assess cases of malaria in children.

We found that there were 56 cases of P. vivax and 28 cases of P. falciparum. Age group 0-5 years had 9 and 5, 5-10 years had 11 and 8 and age group >10 years had 36 and 15 patients respectively. Singh et al[11]aimed to find out and compare the clinical and pathological manifestations of vivax and falciparum malaria in pediatric age group. Eighty-five patients were found to be suffering from malaria. 61 (71.8%) had vivax malaria, while 24 (28.2%) patients suffered from falciparum. Larger majority of malaria patients in both the groups happened to be males. The detailed study of morbidity profile clearly establishes that the complication related severity, earlier attributed to only falciparum is equally seen in vivax. Thrombocytopenia was the commonest finding in both. Other complications seen in both groups were those of cerebral malaria, severe anemia, ARDS, renal failure, malarial hepatitis, leucocytopenia, pancytopenia, shock with multiorgan dysfunction and hemoglobinuria. Even the mortality in the two groups was of the same order as p value calculated for the difference between the two species was well above 0.05

We found that among P. vivax (56) and P. falciparum (28) cases, severe malaria was seen in 63% and 78%, S. Anemia (Hb<5) in 10% and 26%, thrombocytopenia (<1 lakh) in 65% and 57%, thrombocytopenia (<50,000) in 35% and 43%, pancytopenia in 52% and 59%, leucoytopenia in 18% and 15%, CNS manifestations in 27% and 34%, ARDS in 8% and 9%, deranged LFT in 6% and 21% and deranged RFT in 9% and 22% children respectively.We found that age group 5-10 years showed 2 and 1 and >10 years had 3 and 2 mortalities in P. vivax and P. falciparum group. Mahgoub H et al[12], eighteen children were admitted at the hospital during the study period with different manifestations of severe P. vivax malaria namely: severe anaemia (6, 33.3%), jaundice (5, 27.8%), thrombocytopenia (4, 22.2%), hypotension (3, 16.7%), cerebral malaria (2, 11.1%), epistaxis (2, 11.1%), renal impairment (1, 5.5%), hypogylcaemia and more than one manifestation (5, 27.8%).By day 2, all patients were asymptomatic, a parasitaemic and had started oral quinine and primaquine. There was no death among these patients.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that P. vivax was a significant contributor to the morbidity and fatality rates from malaria in children. Compared to falciparum, vivax is far more prevalent.

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