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STUDY OF CLINICAL FEATURES AND EPIDEMIOLOGY OF COMPLICATED VIVAX MALARIA

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Abstract

Severe and complicated malaria is defined by the World Health Organization Malaria Action Programme in June 19851 as the presence of one or more of the following conditions in a slide confirmed diagnosed case of malaria cerebral malaria, severe anemia, renal failure, pulmonary edema or adult respiratory distress syndrome, hypoglycemia, circulatory collapse or shock, spontaneous bleeding, repeated generalized convulsions, acidemia or acidosis, macroscopic hemoglobinuria, impairment of consciousness less marked than unarousable coma,, hyperparasitemia, jaundice, hyperpyrexia, and the presence of complicating or associated infections. However, severe anemia and thrombocytopenia that causes bleeding diatesis is produced by hemolysis, reduced cell deformity of parasitized and non-parasitized erythrocytes, increased splenic clearance, reduction of platelet survival, decreased platelet production, and increased splenic uptake of platelets. Though these changes can be produced by P. vivax and P. falciparum infection yet the complicated malaria has commonly been associated with P. falciparum infections.

Keywords: Study; Clinical Features; Epidemiology.

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1. Introduction

Vivax malaria has been commonly considered benign devoid of these complications. However, there have been reports of complications associated with Vivax malaria[234] P. vivax complications are both sequestration-related and nonsequestration-related[5] including cerebral malaria, renal failure, circulatory collapse, severe anemia, hemoglobinurea, abnormal bleeding, ARDS, and jaundice.

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In view of higher incidence of vivax malaria and recent reports of complications associated with it; there is a need to study the epidemiology of it. Thus a cross sectional study has been carried out to find out the clinical features and epidemiology of complications related to P.vivax malaria in Western Rajasthan.

Indicators of severe malaria	
Manifestation	Features
Initial World Health Organization criteria from 1990 [6]	
Cerebral malaria	Unrousable coma not attributable to any other cause, with a Glasgow Coma Scale score ≤ 9. Coma should persist for at least 30 min after a generalized convulsion
Severe anemia	Hematocrit <15% or hemoglobin < 50 g/l in the presence of parasite count >10 000/µl
Renal failure	Urine output <400 ml/24 hours in adults (<12 ml/kg/24 hours in children) and a serum creatinine>265 µmol/l (> 3.0 mg/dl) despite adequate volume repletion
Pulmonary edema and acute respiratory distress syndrome	The acute lung injury score is calculated on the basis of radiographic densities, severity of hypoxemia, and positive end-expiratory pressure
Hypoglycemia	Whole blood glucose concentration <2.2 mmol/l (<40 mg/dl)
Circulatory collapse (algid malaria)	Systolic blood pressure <70 mmHg in patients > 5 years of age (< 50 mmHg in children aged 1–5 years), with cold clammy skin or a core-skin temperature difference >10°C
Abnormal bleeding and/or disseminated intravascular coagulation	Spontaneous bleeding from gums, nose, gastrointestinal tract, or laboratory evidence of disseminated intravascular coagulation
Repeatedgeneralized convulsions	≥ 3 convulsions observed within 24 hours
Acidemia/acidosis	Arterial pH <7.25 or acidosis (plasma bicarbonate <15 mmol/l)
Macroscopic hemoglobinuria	Hemolysis not secondary to glucose-6-phosphate dehydrogenase deficiency
Added World Health Organization criteria from 2000[7]	
Impaired consciousness	Rousable mental condition
Hyperparasitemia	> 5% parasitized erythrocytes or > 250 000 parasites/µl (in nonimmune individuals)
Hyperpyrexia	Core body temperature >40°C
Hyperbilirubinemia	Total bilirubin >43 µmol/l (> 2.5 mg/dl)

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2. Aims and Objectives

1) To study clinical manifestations and various complications associated with patients of malaria.
2) To study complications associated with P. vivax malaria and related various risk factors.

3. Study Design

The present study was a cross-sectional hospital-based survey in patients of malaria.

The study was conducted in patients admitted at attached hospitals of Dr. S. N. Medical College, Jodhpur.

Selected individuals were examined and findings recorded in pre designed proforma.

Various investigations like routine blood counts including HB, (TLC), (DLC), platelet counts and peripheral blood film, chemistry (liver function test, renal function test, blood sugar & serum electrolyte), HbsAg and hepatitis C marker urine(albumin, pus cells, RBC)specific tests for diagnosis of malaria like MPQBC & MPSTRIP was done. Radiological investigation like Chest Xray,were performed as required The duration of illness and the outcome after treatment was recorded.

Criteria for selection Patients with positive peripheral blood film for malaria parasite and/or positive MP-QBC/ MPSTRIP optimal test and one of the following criteria were included in study.

Table 1: complicated malaria

	FALCIPARUM &MIXED N=71			**Vivax N=79**		
Criteria	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
ANEMIA	4	2	6(8.4%)	2		2(2.5%)
RENAL FALIURE	6	3	9(13%)	4	2	6(8%)
PUL OEDEMA	1		1(1.4%)	2		2(2.5%)
HYPOGLYCEMIA	2	0	2(2.8%)	1	0	1 (1.2%)
HYPOTENSION	2	1	3(4.2%)	2	1	3(3.8%)
ABNORMAL BLEDING	6	2	8(11.2%)	2	1	3(3.8%)
HYPERBILIRU BINEMIA	12	5	17(24%)	6	3	9(11.4%) *
HYPER PYREXIA	6	2	8(11.2%)	5	2	7(8.9%)
CEREBRAL MALARIA	5	4	9(12.7%)	2	1	3(3.7%) *

Table - shows the Incidence of inclusion criteria for severe and complicated malaria Severe anemia is seen in 2.5% cases of vivax as compared to falciparum & mixed in which severe malaria seen in 8.4% cases. pulmonary oedema is seen more in vivax (2.5%) as compared to (1.4%) in

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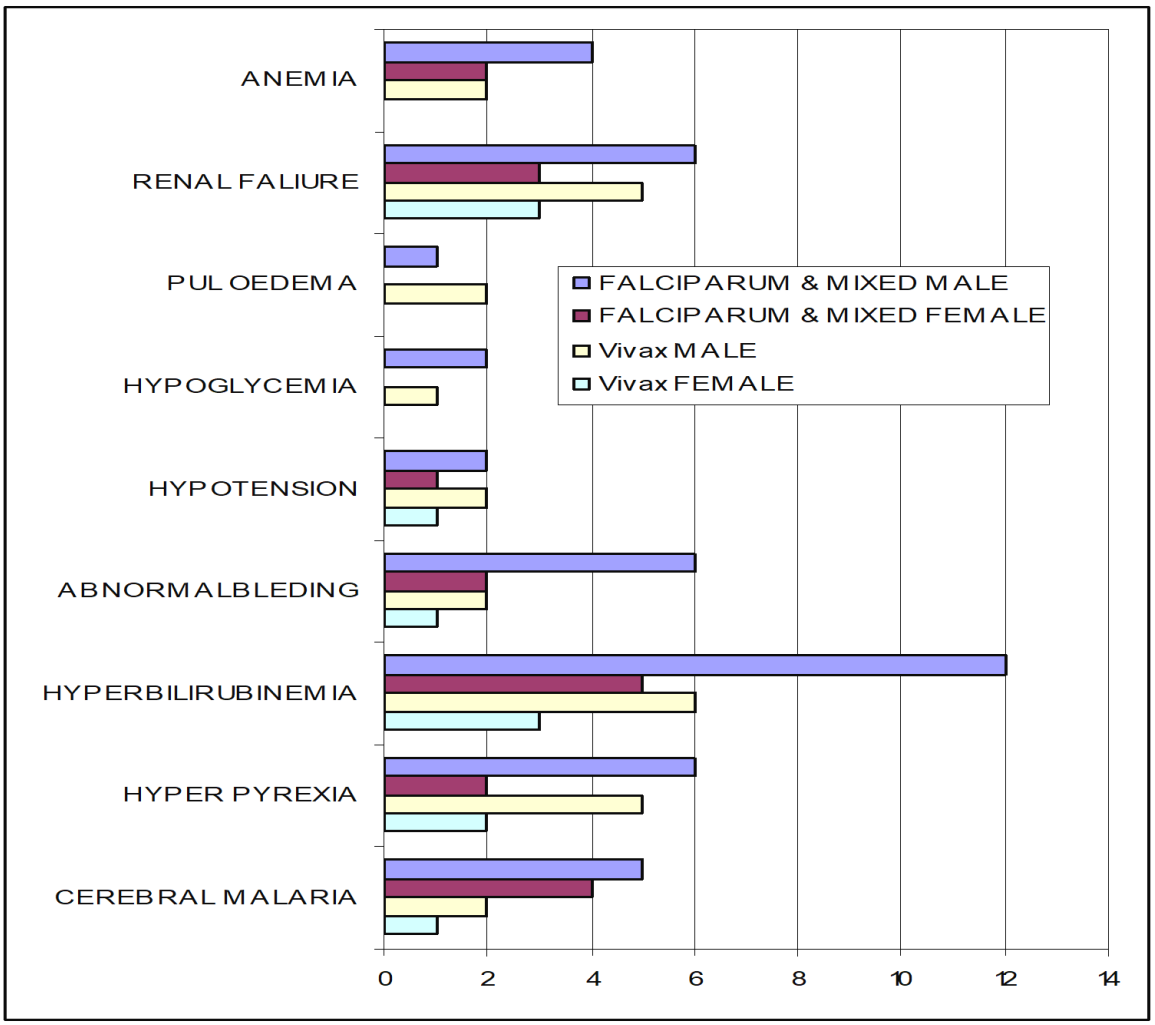
falciparum & mixed. Incidence of hypoglycemia is seen in 1.2% cases of vivax as compared to 2.8% in falciparum & mixed, hypotension is seen in 3.8% cases of vivax as compared to 4.2% in falciparum & mixed, hyper pyrexia is seen in 8.9% cases of vivax as compared to 11.2% in falciparum & mixed .Renal failure, cerebral malaria, $p<.05$ hyper bilirubinemia $p<.05$are all observed in vivax malaria (8%,3.7%,11.4%) but in less incidence than falciparum & mixed(13%,12%,24%).

4. Summary and Conclusions

- Results from our study clearly indicated that complications like cerebral malaria, renal failure, ARDS circulatory collapse, hypoglycemia, severe anemia, jaundice and abnormal bleeding, are not uncommon in pvivax malaria.
- Inspite of low incidence of complication than falciparum and mixed mortality have been reported in vivax malaria.

Bar Graph Showing Difference in Complication Between Vivax and Malaria



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Abstract-The study was carried out on all diagnosed cases of malaria admitted in attached hospitals of Dr. S.N Medical College Jodhpur. Total number of 150 malaria patients, out of them 53% were vivax and 47% were falciparum/ mixed., This study implicates that incidence of complicated vivax malaria is increasing ,previously it was thought that Pvivax infection is benign and uncomplicated but from last few years there are various reports suggesting that incidence of complicated p vivax malaria is rising thus we should be vigilant for the various complications associated with P vivax malaria and treating vivax malaria on lines of complicated falciparum malaria as given by WHO.

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