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ORIGINAL ARTICLE

STUDY OF CLINICAL, HAEMATOLOGICAL AND HEPATIC MANIFESTATIONS IN PATIENTS WITH FALCIPARUM MALARIA

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ABSTARCT: OBJECTIVE: Malarial infection is a major health problem in many parts of India. Several factors have been attributed to increased morbidity and mortality in malaria with altered hematological and hepatic parameters playing an important role. Our aim is to study the clinical, hematological and hepatic manifestations in patients with falciparum malaria. **METHODS**: This observational study was conducted from November 2012 to October 2013 at Kempegowda Institute of Medical Science and Research Hospital Bangalore. 75 patients of falciparum malaria confirmed by PS, MPQBC positive for Plasmodium falciparum or both falciparum and vivax were included in the study. All patients underwent detailed clinical history, thorough physical examination and investigated with hematological and hepatic parameters. This was followed by monitoring the outcome of the patients with respect to morbidity and mortality. Data was analyzed with descriptive statistical tools. **RESULT:** Of the 75 patients fever was present in all cases. Pallor (62%) was the most common sign followed by splenomegaly (58%) and icterus (48%). Anemia (60%) was the most common complication, followed by jaundice (44%), cerebral malaria (40%), ARF (25%), ARDS (12%). 12 patients had severe anemia (Hb% <6 gm %). Severe thrombocytopenia (<50, 000 mm^3) was seen in 5% of the patients. PT and APTT were increased in 23% and 12% of the cases respectively. 2 patients in the study expired. **CONCLUSION**: Clinical manifestations of plasmodium falciparum infection ranged from only fever to severe complications including cerebral malaria, acute renal failure, acute hemolytic crisis and hepatic dysfunction. Acute onset fever and splenomegaly were most common clinical manifestations found. Severe Anemia and jaundice are poor prognostic factor and has adverse outcome. Thrombocytopenia increased PT; aPTT does not have any correlation to mortality.

KEYWORDS: Malaria, Clinical, Hematological, Hepatic, Parameters.

INTRODUCTION: Malaria or ague is the most important parasitic disease of man described since antiquity. It is a protozoan disease transmitted by the bite of infected Anopheles mosquitoes. Malaria is one of the major public health diseases of India. Nearly 1.5 million confirmed cases are reported annually by National Vector Borne Disease Control Program of which 50% are due to Plasmodium falciparum (PF). Despite advances in knowledge; it continues to cause significant morbidity and mortality worldwide.[1] Five species of the genus Plasmodium cause nearly all malarial infections in humans. These are P. falciparum, P. vivax, P. ovale, P. malariae, P. knowlesi.

MATERIALS & METHODS: The present study was conducted from November 2012 to October 2013 at Kempegowda Institute of Medical Science and Research Hospital Bangalore. The study was carried out on 75 patients admitted during the above period. A detailed history was taken followed by a detailed clinical examination to assess clinical severity and complications.

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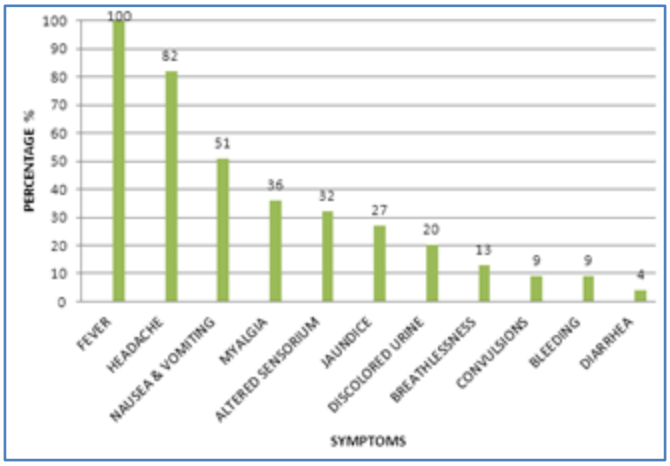
All the patients in this study were proved to be cases of falciparum malaria either by Peripheral smear examination (both thick and thin smear) or MPQBC. These investigations were ordered before the antimalarial treatment was started.

All patients were subjected to routine hematological, hepatic and coagulation parameters. Complete hemogram, Liver function tests, Renal function tests, Prothrombin time, activated partial thromboplastin time, chest x-ray.

Patients with chronic liver diseases, fever of any other cause, and febrile thrombocytopenia of other causes were excluded from the study.

RESULT: Majority of the patients in our study belongs to age group of 20-40 years and male to female ratio was 2:1.5. Fever was present in all patients. Pallor (62%) was the most common sign followed by splenomegaly (58%) and icterus (48%). Anemia (60%) was the most common complication, followed by jaundice (44%), cerebral malaria (40%), ARF (25%), ARDS (12%). 12 patients had severe anemia (Hb% <6 gm %). Severe thrombocytopenia (<50, 000 mm3) was seen in 5% of the patients. PT and APTT were increased in 23% and 12% of the cases respectively. 2 patients in the study expired because of multi organ dysfunction.



Graph 1: Clinical Presentation of Patients Studied

Complications	Number of patients (n=75)	%
Anemia	45	60
Jaundice	33	44
Cerebral Malaria	30	40
Thrombocytopenia	30	40
ARF	19	25.3
ARDS	9	12
Hypoglycemia	6	8
Hypotension/Shock	6	8
Bleeding/DIC	6	8
Hemoglobinuria	3	4

Table 1: Complications

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DISCUSSION: Malaria is a very common cause of fever in tropical countries. The first symptoms of malaria are nonspecific; the lack of a sense of well-being, headache, fatigue, abdominal discomfort, and muscle aches followed by fever are all similar to the symptoms of a minor viral illness.[1] In some instances, a prominence of headache, chest pain, abdominal pain, arthralgia, myalgia, or diarrhea may suggest another diagnosis. Although headache may be severe in malaria, there is not neck stiffness or photophobia as occurs in meningitis. While myalgia may be prominent, it is not usually as severe as in dengue fever, and the muscles are not tender as in leptospirosis or typhus. Nausea, vomiting, and orthostatic hypotension are common.[2]

The classic malarial paroxysms, in which fever spikes, chills, and rigors occur at regular intervals, are relatively unusual and suggest infection with P. vivax or P. ovale. The fever is irregular at first (that of falciparum malaria may never become regular); the temperature of nonimmune individuals and children often rises above 40°C in conjunction with tachycardia and sometimes delirium. Although childhood febrile convulsions may occur with any of the malarias, generalized seizures are specifically associated with falciparum malaria and may herald the development of encephalopathy (cerebral malaria).[3, 4]

Many clinical abnormalities have been described in acute malaria, but most patients with uncomplicated infections have few abnormal physical findings other than fever, malaise, mild anemia, and (in some cases) a palpable spleen. Anemia is common among young children living in areas with stable transmission, particularly where resistance has compromised the efficacy of antimalarial drugs.[5] In nonimmune individuals with acute malaria, the spleen takes several days to become palpable, but splenic enlargement is found in a high proportion of otherwise healthy individuals in malaria-endemic areas and reflects repeated infections. Slight enlargement of the liver is also common, particularly among young children.

Mild jaundice is common among adults; it may develop in patients with otherwise uncomplicated malaria and usually resolves over 1–3 weeks. Malaria is not associated with a rash like those seen in meningococcal septicemia, typhus, enteric fever, viral exanthems, and drug reactions. Petechial hemorrhages in the skin or mucous membranes—features of viral hemorrhagic fevers and leptospirosis—develop only rarely in severe falciparum malaria.[6]

Anemia is common in malaria which results from accelerated RBC removal by the spleen, obligatory RBC destruction at parasite schizogony, and ineffective erythropoiesis. In severe malaria, red blood cells show reduced deformability. Splenic clearance of all RBCs is increased. In nonimmune individuals and in areas with unstable transmission, anemia can develop rapidly and transfusion is often required. As a consequence of repeated malarial infections, children in many areas of Africa may develop severe anemia resulting from both shortened survival of uninfected RBCs and marked dyserythropoiesis. Anemia is a common consequence of antimalarial drug resistance, which results in repeated or continued infection.[7]

Patients with falciparum malaria usually develop mild thrombocytopenia and coagulation abnormalities. Of patients with severe malaria, <5% have significant bleeding with evidence of disseminated intravascular coagulation. Hematemesis from stress ulceration or acute gastric erosions may also occur rarely.[8]

Mild hemolytic jaundice is common in malaria. Severe jaundice is associated with P. falciparum infections. This is more common among adults than among children; and results from hemolysis, hepatocyte injury, and cholestasis. When accompanied by other vital-organ dysfunction

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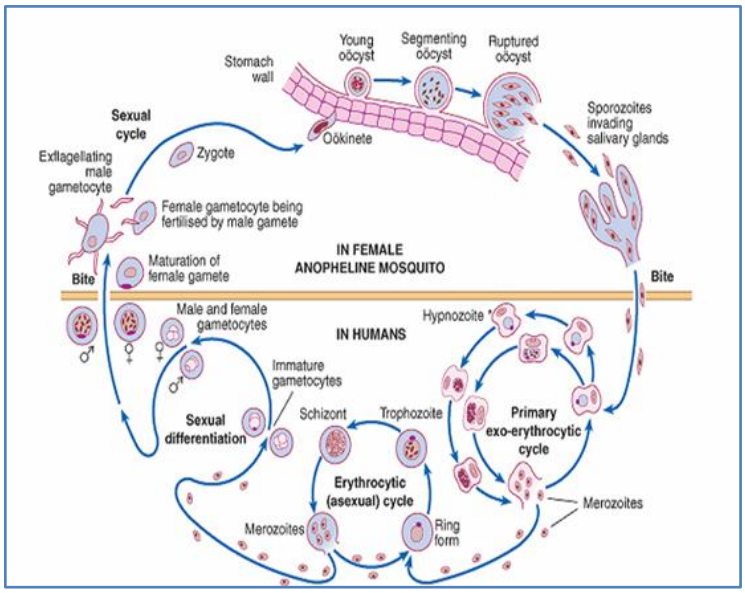
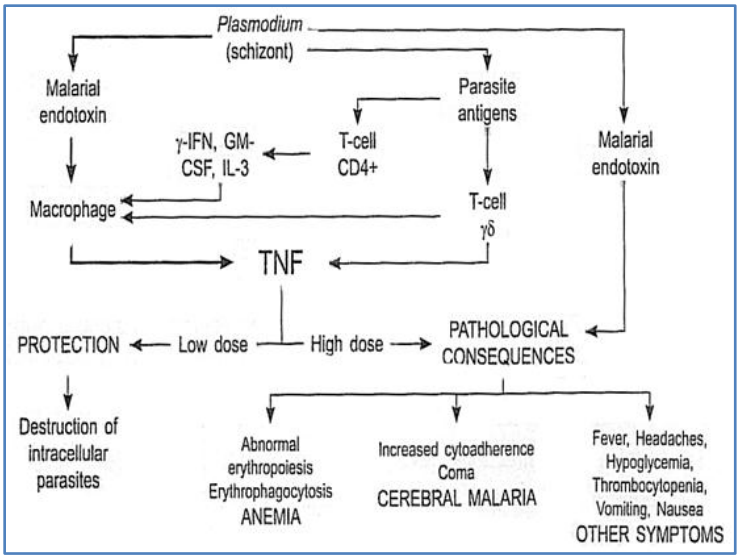
(often renal impairment), liver dysfunction carries a poor prognosis.[9] Hepatic dysfunction contributes to hypoglycemia, lactic acidosis, and impaired drug metabolism. Occasional patients with falciparum malaria may develop deep jaundice (with hemolytic, hepatic, and cholestatic components) without evidence of other vital-organ dysfunction.[10]



Life cycle of Plasmodium falciparum



Pathophysiology of malaria complications

CONCLUSION: The incidence is higher in males than females with peak incidence in 3rd and 4th decade. Fever is the presenting complaint in almost all the cases. Easy fatiguability indicates severe anemia in malaria. Splenomegaly is an important sign in malaria, but absence of this does not rule out malaria. Anemia is the most common hematological abnormality. Thrombocytopenia is very common

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in malaria, but spontaneous bleeding is rare. PT and aPTT were prolonged in some cases, but this does not correlated with spontaneous bleeding. Severe anemia and jaundice is poor prognostic factor and it increased the duration of hospital stay and even mortality.

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