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A CLINICAL STUDY OF CLINICAL SPECTRUM, BIOCHEMICAL AND HEMATOLOGICAL PROFILE OF ACUTE FALCIPARUM MALARIA

General Medicine

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ABSTRACT

INTRODUCTION: Malaria is a major international public health problem and also a major infectious cause of fever in endemic countries like India. Progression to severe disease is largely confined to falciparum species.In an endemic area, apart from classical presentations of fever with chills and rigor, not uncommonly a completely different presentation may be encountered because of multisystem involvement in the disease process and late diagnosis can lead to significant mortality and morbidity.

AIMS AND OBJECTIVES: To study clinical presentations (common and atypical), assess life threatening complications, noting biochemical and hematological abnormalities and correlating with clinical severity and prognosis.

METHODOLOGY: Study sample: One hundred cases of QBC MP positive falciparum malaria admitted in medical wards from march 2017 to july 2018.

INCLUSION CRITERIA: One hundred cases of QBC MP positive falciparum malaria (confirmed by slide positivity for asexual stage of the parasite) admitted to the medical wards and intensive care units were included in the study

EXCLUSION CRITERIA: Patients below the age of 13 years , Pregnant and Lactating women,
Patients – coexistence of both Falciparum malaria and Leptospirosis, Mixed infections like associated plasmodium vivax

KEYWORDS

INTRODUCTION:

Malaria is a major international public health problem. Plasmodium falciparum is the most prevalent malaria parasite in sub-Saharan Africa, accounting for 99% of estimated malaria cases in 2016.[1]. The global occurrence of malaria can be attributed to a variety of factors insecticide resistance in Anopheles mosquito and isolation of Plasmodium falciparum with reduced sensitivity to artemisinin derivatives have emerged and spread across South East Asia in the past 10yrs with evidence of their existence stretching from the coast of Vietnam to the Myanmar-India border[(2)]. Progression to severe and fatal disease is largely but not entirely confined to plasmodium falciparum infections. Although they contribute much less than Plasmodium falciparum to global burden of severe malaria, both Plasmodium vivax and Plasmodium knowlesi can also cause severe disease[3].

AIMS AND OBJECTIVES:

1. To find out common clinical presentations and also atypical presentation if any of acute Plasmodium falciparum malaria
2. To assess life threatening complications of severe malaria.
3. To collect a detailed haematological and biochemical profile in acute falciparum malaria with the objective of noting its abnormalities and correlation if any with clinical severity and prognosis.

MATERIALS AND METHODS:

The study was carried out at Department of Medicine, Guntur medical college,Guntur from march 2017 to july 2018.

Inclusion criteria:

One hundred cases of QBC MP positive falciparum malaria (confirmed by slide positivity for asexual stage of the parasite) admitted to the medical wards and intensive care units were included in the study.

Exclusion criteria:

1. Patients below the age of 13 years
2. Pregnant and Lactating women.
3. Patients – coexistence of both Falciparum malaria and Leptospirosis
4. Mixed infections like associated plasmodium vivax

METHODOLOGY

A detailed history and clinical examination was carried out to note complications and assess severity after obtaining written informed consent.The following laboratory investigations for haematological parameters were carried out: Hemoglobin estimation, Total and Differential Leucocyte count, Total Platelet count. In severe cases coagulation parameters like

Sign	%patients
Pallor	49
Icterus	31
Systolic bp<80mmhg	7
Sign	**%patients**
hepatomegaly	20
splenomegaly	25
crackles	1
Meningeal irritation	2

Bleeding time, whole blood Clotting time, Prothrombin time were done. Biochemical investigations like blood Sugar, serumBilirubin, Aspartate and Alanine aminotransferase, blood Urea, serum Creatinine and Electrolytes were also carried out. In patients with respiratory distress and renal failure X-ray Chest and Arterial Blood Gas Analysis were analyzed. HBsAg and Anti HCV in selected cases are done. All patients are treated with artemisinin derivatives as the prevalence of Chloroquine resistant falciparum is very high in our area.

In severe falciparum malaria cases with multisystem involvement Leptospirosis and Dengue fever were ruled out by doing MSAT & MAT and IgM & IgG 32 antibodies for dengue respectively. All patients were treated with Artesunate. Other supportive measures in the form of antibiotics,anticonvulsants, antiemetics, blood transfusion inotropic support and fluids dialysis and ventilator support as and when required

OBSERVATIONS AND RESULTS:

Patient characteristics:

Sex	No.of patients
Male	72
Female	28

SEX	MEAN	MINIMUM	MAXIMUM
MALE	38.34	13	73
FEMALE	39.78	15	70

CLINICAL MANIFESTATIONS:

The mean time from symptom onset until physician contact was 6.87 days. The most common clinical presentation was fever (100%), followed by vomiting and headache. Abdominal pain was present in five patients. Six patients had diarrhea. Impaired consciousness was present in 14 patients.Headache was present in 20 patients.Cough was present in two patients.Eight patients had urinary symptoms in the form of oliguria and anuria. Two patients had bleeding manifestations.Seizures were present in four patients.

Symptoms	%of patients
Fever	100
Chills	76
Vomitings	31
Loose stools	6
Pain abdomen	5
Decreased urine output	8
Headache	20
Cough	3
Dyspnea	1
Impaired consciousness	14
Seizures	4
Bleeding manifestations	2
Jaundice	23

Hematological parameters:

Hemoglobin(g/dl	No.of cases
<5	4
5.1-7	6
7.1-9	14
9.1-10.9	25
≥11	51

Leukocyte count:

Leukocyte count cells/mm3	No.of patients
<4000	15
4000-11000	79
>11000	6

Platelet count

Platelet count cells/µl	No.of patients
<20,000	8
20,000-50,000	25
51,000-1,00,000	17
>1,00,000	50

Liver function tests:

Serum bilirubin	No.of patients
<3	74
3-10	18
>10	8

ALT level	No.of patients
<40	79
40-100	11
>100	10

AST level	No.of patients
<40	78
40-100	12
>100	10

Serum creatinine	No.of patients
<1.5	84
1.5-3.0	9
>3.0	7

SUMMARY:

1) An observational and prospective study was carried out from july 2017 to August 2018 at Department of Medicine, Guntur government Hospital ,guntur with objectives of finding the common clinical presentation of Falciparum malaria and if any atypical presentation, hematological and biochemical parameters and their association with disease severity and complications and prognostic indicators
2) 100 cases of fever, positive for malarial parasite by QBC method and confirmed for falciparum malaria by slide positive for asexual stage of P.falciparum were recruited into the study and followed
3) In our study males predominated accounting for 72%% of cases and females were 28%%.
4) The mean age group in our study population was 39.06 years, maximum age being 73 years. Among male group the mean age was 38.34years.Most male patients' age group was between 2nd and 3rd decade. In female group the mean age was 39.78 years. Most female patients age group between 4th and 5th decade
5) The most common clinical presentation was fever and it was present in 100% of cases. However it was associated with chills and rigor only in 76% of cases[4]
6) The next common presentation was vomiting (31%) followed by Jaundice (23%), headache (20%), altered sensorium (14%), abdominal pain (6%) and diarrhea (5%).[4]
7) One patient (1%), presented with fever , abdominal pain and vomiting mimicking acute appendicitis. Two patients (2%) had bleeding manifestations
8) The commonest clinical sign apart from fever was pallor (49%%),icterus (31%), splenomegaly (25%) and hepatomegaly (20%),hypotension with systolic blood pressure <80mm Hg (7%),meningeal irritation(2%),crackles (1%)
9) The most common hematological abnormality was thrombocytopenia[5](50%) 33% of cases had platelet count < 50,000/µl
10) Hb<5g/dL was present in 4% cases and all of them received blood transfusion
11) Leucopenia (15%) and Leucocytosis (6%) were noted in our study[6]
12) Liver impairment was noted in 26% of cases with bilirubin more than 3 mg%. 8% of patients had bilirubin more than 10mg%. The maximum bilirubin was 15.4mg%.Mortality was noted in 4 cases with bilirubin more than 10 mg%.
13) As per WHO criteria of sever falciparum malaria renal failure was noted in 7% of cases with serum creatinine more than 3 mg%. Three patients received hemodialysis
14) Six (6%) patients had metabolic acidosis
15) Ten (10%) patients had cerebral malaria
16). 1 % of patients developed ARDS .Mortality was 100 % in ARDS group
17) Mortality rate was 5 % in our study group. Most of them had liver ,renal impairment and cerebral involvement and 1% of them had ARDS

CONCLUSIONS :

Even though the incidence of malaria is decreasing, Falciparum Malaria infection is the commonest etiology of complicated malaria. The commonest clinical presentation is fever. The commonest hematological abnormality is thrombocytopenia. Thrombocytopenia is rarely accompanied by clinical bleeding and has therapeutic implications in context of avoiding unnecessary platelet infusions. Splenomegaly is important sign but its absence, does not rule out malaria. Factors associated with high mortality are renal failure,hypotension, metabolic acidosis, severe liver dysfunction,cerebral involvement and ARDS[7]

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