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ORIGINAL ARTICLE

FALCIPARUM MALARIA – IT'S VARIED PRESENTATION: AN OBSERVATIONAL STUDY AT A TERTIARY CARE HOSPITAL

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ABSTRACT: Today we are witnessing a change in the scenario of Malaria in India with respect to increase in the incidence of falciparum malaria, drug resistant strains and some vivax presentations changing from benign to malignant type. With varied manifestations falciparum malaria forms a DD to all acute febrile illness especially in endemic areas. With 70-100 million cases annually, India is becoming the capital for all malarial problems of the world. **AIM OF THE STUDY:** To study the varied presentation of confirmed falciparum malaria patients and their treatment out come at a tertiary care hospital. **MATERIALS AND METHODS:** This is a hospital based cross sectional study for three years – from 01 Jan. 2011 to 31 Dec. 2013 based on the hospital records (Case sheets with demographic profile, Clinical features, Investigations & treatment outcomes. **RESULTS:** 72 patients confirmed by blood smear examination were included in the study. Majority were males (66.66%) and belonged to the age group of 21-50 years (72.22%) and majority were admitted in post-monsoon months (66.66%). 77.77% of patients were referred from various centers and 27.77% with complications. Only 55.55% had classical fever and chills and 35.7% had host of atypical manifestations with 19.64% of patients presented to various departments. All the patients were treated mainly with Artemisinin group (ACT) and 89.28% patients recovered in 7-21 days. The mortality was 12.5%. **CONCLUSION:** The present study explains the importance of knowing the diverse mode of presentation of falciparum malaria. Early diagnosis, early referral and early initiation of ACT will decrease the mortality and morbidity.
KEYWORDS: Cerebral Malaria, Severe Malaria, Falciparum Malaria.

INTRODUCTION: Malaria is an important Protozoan disease that causes illness and death and is being considered as an important differential diagnosis for all acute febrile illness in this part of the world. WHO forecasts a growth of 16% in malaria cases globally, every year. Malarial outbreaks have increased in frequency since 1990, especially in the monsoon period.[1] India contribute for 70 -100 million cases per year with 45-50% of them are due to plasmodium falciparum (Pf) malariae.[2] Recent review of literature shows that the incidence of PF malaria in India has increased from 14% in 1970 to 50% in 2009.[3] Falciparum malaria is responsible for most of the deaths.[4] The malarial scenario is fast changing in our subcontinent with increasing incidence of Falciparum malaria and emerging resistant strains. The classical presentation is less common and is seen only in 50-70% of cases. Atypical manifestations, multi organ involvement, delay in diagnosis, delay and inadequate treatment of PF cases have increased the mortality and morbidity. Wide spread drug resistance in PF cases have complicated the management protocols.[5] Due to the prevailing local health scenario and lack of awareness of atypical features of Malaria, it's common for Falciparum Malaria to get diagnosed late and even remain undiagnosed, resulting in severe illness and death.

AIM OF THE STUDY: To study the varied clinical manifestations of Falciparum Malaria.

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To study the treatment outcome in hospitalized confirmed Falciparum Malaria patients.

MATERIALS AND METHODS: This is a hospital based, cross sectional study done at Victoria Hospital attached to Bangalore Medical College and Research Institute for a period of three years. As this is a tertiary care hospital it attracts patients all over the state and from neighboring districts of Andhra Pradesh and Tamilnadu. All hospitalized adult confirmed Falciparum Malaria patients (Blood smear for Malarial parasite was positive). Were included in the study and their case sheets were analyzed for demography, clinical features, lab reports, procedures, complications and treatment outcome from 01 Jan 2011 to 31 December 2013. All smear negative patients (Suspected PF cases) who responded to empirical treatment of ACT were excluded from the study.

RESULTS: Among 208 smear positive Malaria patients treated as inpatients between 1st January 2011 to 31st December 2013, 128 were positive for Plasmodium Vivax, 76 were positive for plasmodium falciparum and 4 patients were positive for both PF and PV types (mixed infection). Out of 76 PF cases, 72 were included in this study due to poor documentation in 4 patient records. Out of 72 confirmed Falciparum Malaria patients, 48(66.66%) were males and 24(33.33%) were females. 52 patients were between the age groups of 21-50 years contributing to 72.22%. 56 patients were referred from all around the state and adjoining districts of TN and AP. and the others were direct admissions. 60 patients were from rural places (83.33%). 20 patients were referred with complications, like cerebral Malaria, Renal failure, ARDS or multi organ dysfunction and 08 patients with initiating ACT at their hospitals and 12 patients without initiating ACT. The number of PF Malaria patients (48) requiring admission increased from May onwards with maximum admissions in July, August, September, October (66.66%).

Fever at admission ranging between 2 days to 12 days were noted in 52 patients but fever as the first symptom was recorded in 70 patients. Only 40(55.55%) patients had history of classical fever with chills pattern. Atypical fever in the form of type, duration, quality was present in 32 patients (44.44%). The important symptoms apart from fever were jaundice in 20, fatigue in 32, altered sensorium in 24, head ache in 28, convulsions in 4, pain abdomen and dyspepsia in 16, bleeding episodes in 6, abnormal behavior in 2, blurring of vision in 2, breathlessness in 4, joint pains in 3, vomiting in 4 patients respectively. History of chronic cigarette smoking in 20 and chronic alcohol consumption in 24 patients were present.

On examination 52 patients had fever, 20 patients had icterus, 24 patients had pallor, 6 patients had bleeding tendencies, 4 patients had hypotension, 12 patients had hepatomegaly, 8 patients had splenomegaly, 6 patients had respiratory signs and 8 patients had meningeal signs.

A total of 28 patients (38.88%) had co-morbid conditions and the important ones are- type2 DM in 12(16.66%), hypertension in 8(11.11%), IHD in 4(5.55%), Bronchial asthma in 4(5.55%), OA in 2(2.77%), aplastic anemia in 2(2.77%) and COPD in 2(2.77%) patients.

Lab parameters showed severe anemia (Hb<5gm%) in 12(16.66%) patients, leukocytosis in 2(2.77%), leucopenia in 18(25%), thrombocytopenia in 32(44.44%), abnormal LFT (increased bilirubin >2.5mg/dl, 3 fold rise in AST and ALT) in 18(25%), abnormal RFT in 24(33.33%), ARDS picture on chest x-ray in 2(2.77%), abnormal CSF picture in 18(25%), CSF smear positive for PF was seen in 3(4.16%) patients.

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Most of the referred patients had more than one complication at admission. Important complications were severe anemia in 12 patients, cerebral malaria in 8, renal failure in 18, metabolic acidosis in 4, multi organ dysfunction in 12, ARDS in 2, hypotension with shock in 4 patients.

All the 72 patients received combination of antimalarial treatment with artemesenin based combination (ACT). In addition 24 patients received appropriate antibiotics also to cover the possible secondary infection based on the clinical judgment and lab reports (ceftriaxone in 18 patients, majority in the early part of infection, for a period of 5-7 days). 4 patients were treated in medical ICU with ventilatory support and 8 patients underwent hemodialysis at nephro-urology center, inside Victoria hospital complex. 9 patients received blood transfusion and 6 patients received platelet transfusion. Out of 72 patients, 3(2.68%) patients went DAMA after initial recovery, 9(12.5%) expired and remaining 60(83.33%) patients recovered. The duration of hospitalization was between 9 days to 24 days. The important causes of death in expired patients include renal failure with metabolic acidosis in 4, cerebral malaria in 3, ARDS or aspiration pneumonia in 2 patients.

DISCUSSION: This cross sectional hospital based study for a period of one year, showed that males (66.66%) were more affected than females (33.363%). Study also showed rural dominance (83.33%) of patients. As this is a tertiary hospital 77.77% of the cases were referred patients, including 27.77% of complicated malaria, from across the state and neighboring states. Majority of the patients were between the age groups 21-50 years contributing to 72.22% of all the cases. Cases were seen around the year as complicated PF cases were referred for management. Seasonal spikes of incidence were noted especially in the post monsoon period (July - October) amounting to 66.66% of patients, though geographical heterogeneity and seasonal variation influence the prevalence of malaria. The similar trend was observed in all the three years.

Fever was the commonest presentation seen in 97.22% patients at first consultation but fever was recorded in 72.22% of patients in our tertiary hospital. Typical and classical fever and chills were seen only in 55.55% patients. Atypical fever was recorded with respect to duration and severity in 44.44% patients. The reported incidence of Cerebral malaria in an endemic area is 3.05%.[6] In our study Cerebral malaria was noted in 25% as majority of them were referred from small centers, while LOC and altered sensorium was recorded in 33.33% of patients. Atypical manifestations in falciparum malaria from Jamshedpur, demonstrated convulsions in 28.55%, abdominal pain in 5.7%, hemiplegia in 2.8%, fatigue and palpitations in 5.5% patients.[7] In our study, we have noted headache in 44.44%, jaundice in 27.77%, fatigue in 44.44%, pain abdomen and dyspepsia in 22.22%, convulsions in 5.55%, breathlessness in 5.55%, bleeding episodes in 8.33% of patients.

In one study from Orissa 86.7% had anemia and 10% had severe anaemia.[8] but in our study anemia was noted in 12(16.66%) of cases. Thrombocytopenia was reported in 40.5%-85%.[9] patients of malaria, but in our study thrombocytopenia was noted in 44.44% patients here falciparum malaria forms an important DD for Dengue and other hemorrhagic fevers. Deranged LFT and RFT were recorded in 18(25%) and 24(33.33%) respectively as deranged RFT were recorded in 27.70% of patients in Mahakur et al, Behrampur, Orissa (1983).[10]

27.77% of the study patients were referred with complications from all around and with varied presentations of PF malaria there was a definite delay in the diagnosis and in the initiation of ACT.In this study severe falciparum malaria was observed in 33.33% of patients satisfying the WHO guide lines.[11] which are on par with other studies.[12,13]

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The striking points of this study are 56 patients (77.77%) visited medicine/emergency medicine department while rest 16(22.22%) visited all other departments- neurology 5, surgery 2, OBG 1, ENT 1, Orthopedics 1, nephrology 3, ART center 1, Ophthalmology 1, and Psychiatry 1, with various symptoms. After blood smear becoming positive for MP, they were later referred to the department of medicine. At least 12 patients received first dose of antimalarial medication (ACT) after 7 days of symptoms. Lot of time was wasted by the patients to receive the antimalarial treatment due to delay in reporting, blood smear tests and empherical use of antibiotics by general practioners. This may be the reason for early complications and probably some deaths. All confirmed falciparum malaria patients (Smear positive) were treated with antimalarials - with artemesenin based combination (ACT) and 83.33% patients recovered completely by 9 to 24 days of hospitalization.

In our study 9 patients expired and the mortality rate was 12.5%. The causes of death were cerebral malaria in 3 patients, renal failure with metabolic acidosis in 4, pneumonia with ARDS in 2 patients. Among the deaths 6 patients were referred late (after 5-7 days) with complications. 33.5% mortality rate was observed in a Bikaner, Rajasthan study.[14]

CONCLUSION: The present study explains the importance of knowing varied manifestations of falciparum malaria as malaria is not a simple disease of fever with chills and rigors. Falciparum malaria may be considered as a differential diagnosis for all complicated cases of fever in an endemic area, like India. Nonspecific symptoms, changing clinical signs, poor smear positive rates and ongoing Dengue epidemics will add up to the confusion in diagnosis and hence much time is being wasted before the antimalarial treatment is initiated. Early and effective blood smear examination for MP and early referral to major centers for the management of complications can save thousands of falciparum malaria patients in endemic areas. The changing scenario of malaria will be a challenging force to all health care providers in this country to control or to contain malaria.

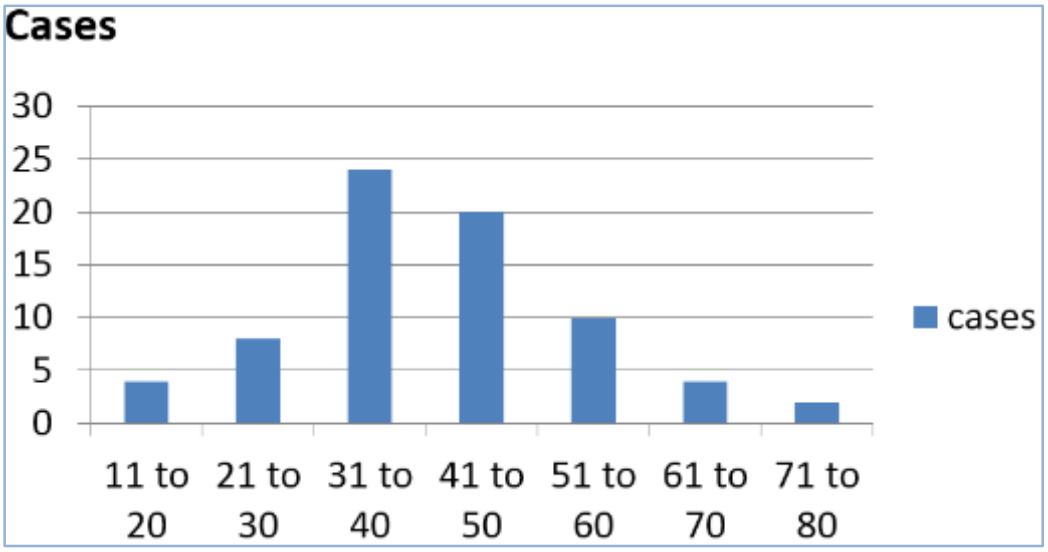

Table 1: Age wise distribution

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Symptoms	No. of cases	Percentage
Fever with chills	40	55.55
Atypical fever	32	44.44
Altered sensorium	24	33.33
Head Ache	28	38.88
Breathlessness	04	5.55
Vomiting	04	5.55
Blurring of vision	02	2.77
Jaundice	20	27.77
Joint pains	03	4.16
Convulsions	04	5.55
Fatigue	32	44.44
Bleeding tendencies	04	5.55
Abnormal behaviour	02	2.77
Pain abdomen/dyspepsia Abnormal behaviour	16 02	22.22 2.77

Table 2: Various modes of presentation (n=72)

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