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Original Research Article

Manifestations of malaria: a clinical experience

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ABSTRACT

Background: Malaria is fast emerging as a number one infectious disease with high morbidity and mortality across the globe. It's being transmitted across 108 countries containing 3 billion populations (40% of world's populations) with more than 3 million deaths per year. India is an endemic country for malaria with an estimated 70-100 million1 cases per year. 45-50% of them are due *to Plasmodium falciparum* (Pf). Pf is responsible for majority of severe and fatal malaria though death due to *Plasmodium vivax* mono infection have also been reported. Symptoms and sign are highly non-specific in malaria making it more of a clinical diagnosis more than a laboratory diagnosis. Presentation may vary at times and can be quite confusing as malaria is a multisystem disease. Authors' idea was to study the variable manifestations in confirmed cases of malaria patients at our hospital

Methods: A hospital based cross sectional study was conducted for a period of one year-from 01-08-2015 to 31-07-2016 based on authors' hospitals records (case sheets with demography profile, clinical features, investigations and treatment outcome).

Results: A total of 369 patients positive for malaria parasite were included in the study. 369 were smear positive-219 positive for *Plasmodium vivax*, 127 were *P. falciparum* type and 23 were for both. Majority were males (64.50%) and belonged to the age group of 21-50 years (58.84%). They were admitted in post monsoon months (60.43%). Of them 46.44% had classical symptoms of malaria. All the patients had received mainly artemisinin combination therapy (ACT) and 91.87% patients recovered in 7-28 days. The mortality rate was nearly 5.69%.

Conclusions: The present study was useful to know the varied manifestations of malaria and hence will be useful in making a clinical diagnosis of malaria.

Keywords: ACT (Artemesinin combination therapy), Atypical manifestations, Malaria, Severe malaria

INTRODUCTION

Malaria is fast emerging as a number one infectious disease with high morbidity and mortality across the Globe. It's being transmitted across 108 countries containing 3 billion populations (40% of world's populations) with more than 3 million deaths per year. India is an endemic country for malaria with an estimated 70-100 million cases per year.[1] 45-50% of them are due to *Plasmodium falciparum* (Pf). Pf is responsible for majority of severe and fatal malaria though death due to *Plasmodium vivax* mono infection have also been reported.

Symptoms and sign are highly non-specific in malaria making it more of a clinical diagnosis more than a laboratory diagnosis. Presentation may vary at times and can be quite confusing as malaria is a multisystem disease. Classical presentations are less common and is seen only 50-70% of cases.[2] Appropriate clinical diagnosis varies from area to area according to intensity

of transmission, malaria parasite species, drug resistance status and other prevailing infectious causes.

Atypical manifestations are common and add confusion to the diagnosis as malaria can mimic any febrile illness. It forms a differential diagnosis for any fever in endemic areas especially in country like India. Lack of awareness of atypical features leads to misdiagnosis or late diagnosis of malaria resulting in increased mortality and morbidity.

This is a hospital based cross sectional study aimed to analyse the variable manifestations of malaria which can help in early clinical diagnosis. This in turn can influence the outcome of treatment.

METHODS

The study was conducted using records from hospitals attached to Bangalore Medical College and Research Institute, Bangalore. This was a hospital based cross sectional study done in all hospitalized fever patients whose blood smear for malarial parasite was positive.

Inclusion criteria

- All blood smear positive cases for MP
- Age more than 18 years.

Exclusions criteria

- Fever cases with a definite diagnosis other than malaria
- Age less than 18 years.

RESULTS

A total of 369 hospitalised patients with fever were included in the study. 238 (64.5%) were males and 131(35.5%) were females.

Table 1: Gender distribution of patients.

Gender	No.	Percentage
Male	238	64.5
Female	131	35.5
Total	369	100

Most of the patients were between the age groups of 21-50 years contributing to 61.81% of all cases with high prevalence between the age of 31-40 years. Most of the cases were referred (78.86%) from other hospitals or primary health care centres and others were directly admitted (21.14%) to authors' hospital.

It was seen that majority of our patients were from rural places in and around Bangalore (68.30%). The maximum admissions were seen in the months of August, September and October 2015 (52.03%) corresponding to the Monsoon period in India.

Table 2: Age distribution of patients.

Age (years)	No.	Percentage
21-30	43	11.66
31-40	114	30.9
41-50	71	19.24
51-60	77	20.87
>60	64	17.34
Total	369	100

Table 3: Symptoms distribution of patients.

Symptoms	No.	Percentage
Fever	357	96.75
Fever with chills	172	46.61
Jaundice	55	14.91
Altered sensorium	44	11.11
Pain abdomen	22	5.96
Vomiting	21	5.69
Headache	19	5.15
Breathlessness	17	4.61
Cough	15	4.07
Convulsions	14	3.79

Symptoms analysis at admissions showed that 357 patients (96.75%) had fever ranging between 2 days to 4 weeks and only 46.61% (172) had classical fever with chills pattern. The other important atypical presentations noted at presentation were jaundice (14.91%), loss of consciousness, altered sensorium (11.11%), pain abdomen (5.96%), vomiting (5.69%), headache (5.15%), breathlessness (4.61%), cough (4.07%) and convulsions (3.79%).

Rare manifestations like black water fever was observed in only 2 patients and systemic vasculitis, induced as a consequence of malaria was seen in one patient.

General physical signs at admissions were-all (100%) patients had fever, 14.7% had icterus 10% had pallor, 2.2% hypotension, hepatosplenomegaly in 1.09%, splenomegaly in 4.16%, respiratory signs (crackles) 3.6%, meningeal signs in 9.2% and coma/stupor in 3%.

On routine investigations mean Hb% was 9.26±2.2gm/dl, thrombocytopenia in 12.5% patients, thrombocytosis in 0.8% patients, deranged LFT in 18.68% patients, abnormal RFT in 3%, abnormal chest x-ray (1.2%) in the form of Lobar Pneumonia, abnormal ECG in the form of variable conduction abnormalities in 0.9%.

Of the 369 patients, 9.2% had cerebral malaria, 3% had renal failure, 1.7% had polyarthritis, 2.25% had septicaemia and multiorgan failure.

Blood smear was positive for MP In369 patients out of which 219 (59.34%) were *Plasmodium vivax*, 127

(34.4%) were *Plasmodium falciparum* and 23 (6.2%) had mixed infections.

All the 369 patients received antimalarial treatment either in the form of ACT or standard antimalarial therapy as recommended by National vector borne disease control programme. Four patients received blood transfusion as a part of severe anemia and 2 patients received platelet transfusion due to bleeding diathesis. 21 (5.69%) died in the hospital. Of them 16 died due to multiorgan dysfunction and the remaining due to suspected cerebral malaria. The remaining 339 (91.87%) patients recovered and were discharged.

DISCUSSION

This cross-sectional study showed that males (64.5%) were more affected then females (35.5%). Study also showed rural dominance (68.30%) compared to urban (31.70%) population. Majority of the patients were between the age of group 21-50 years with high incidence between the age group of 31-40 years (30.9%). Seasonal spikes of incidence were noted especially in the post monsoon period (Aug-Oct) though geographical heterogeneity and seasonal variation influence the prevalence of malaria.[4]

Fever was the commonest presentation seen in 96.75% patients. Typical and classical fever with chills was seen in only 46.61% patients. Loss of consciousness and altered sensorium was recorded in 11.11% of patients. Clinical suspected cerebral malaria was noted in 9.2% patients while the reported incidence of cerebral malaria is between 2.55% and 3.05% in an endemic area.[5,6]

In one study from Orissa 86.77% had anaemia and 10% had severe anaemia but in our study anaemia was noted in only 42% of cases and Thrombocytopenia was noted in 12.5% patients.[7] Hyperbilirubinemia was recorded in 14.7% of patients. Deranged liver function tests and renal functions were recorded in 26% and 22% respectively. Whereas derange RFT were recorded in 27.70% of patients in Mahakamital, Berhampur, Orissa.[8]

Other atypical manifestations noted were dry cough (4.1%), breathlessness (4.6%), polyarthritis (1.7%), vertigo (2.2%, haemoptysis (11.4%) and hematemesis (1.09%). The sequestration of erythrocytes containing metabolically highly active parasite in the vascular bed of many internal organs can explain almost all the pathological events and many symptoms are due to the release of cytokines namely TNF-Alpha, IL-1and IL-6.[9]

Suspected malaria patients (h/o fever, not responding to routine antibiotics and without a proper diagnosis) including patients referred from other department for fever work up improved dramatically ACT. In present study 21 patients expired and the mortality rate was 5.69%. The causes of death were cerebral malaria in 7 patients, renal failure 4, septicaemia and multi-organ dysfunction 5, severe thrombocytopenia 2 and ARDS in 3. Most patients who died were Pf smear positive cases. patients. The present study has less mortality compared to a study conducted in Bikaner, Rajasthan, India, where the mortality was 33.5%.[10]

Malaria is a great masquerader and can mimic anything and everything. Symptoms and signs are highly nonspecific, and the smear positive rates are also not high. Early clinical suspicion by knowing atypical manifestations and after with group treatments using antimalarial (ACT) Especially endemic area will help to control mortality and morbidity in malaria patients.

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