

# Study on a Typical Manifestations in Malaria at a Tertiary Referral Centre in Bangalore

Dr. Raveendra K. R<sup>1</sup>, Dr. Prabhu<sup>2</sup>

<sup>1</sup>Associate Professor of Medicine, Department of medicine. BMC Bangalore, K.R.Road, Chamarajpet, New Tharagupet, Bangalore, Karnataka 560002, India

<sup>2</sup>Dr. Prabhu. Assistant Professor of Medicine, Department of medicine, BMC Bangalore, K.R.Road, Chamarajpet, New Tharagupet, Bangalore, Karnataka 560002, India

**Abstract:** ***Introduction:** Malaria remains an overwhelming problem in the tropical developing countries. With varied manifestations it 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 manifestations in confirmed Malaria patients at a tertiary care hospital. **Materials and methods:** This is a hospital based cross sectional study for one year – from 01 April 2011 to 31 March 2012 based on the hospital records (case sheets with demography profile, clinical features, investigations & treatment outcomes) **Results:** 369 fever patients either positive for Malaria parasite or without a definite diagnosis but responded to antimalarials were included in the study. 96 weresmeared positive-57 positive for PV, 33 were PF type and 06 were positive for both. Majority were males(64.50%) and belonged to the age group of 21-50 years(58.84%) and were admitted in post monsoon months (60.43%).Only 46.44% had classical symptoms and 53.56% had host of atypical manifestations with 12.50% of patients presented to various departments and were later referred to medicine department for smear positive status or fevers not responding to routine antibiotics. All the patients were treated mainly with Artemisinin group (ACT) and 91.87% patients recovered in 7-28 days. The mortality rate was 5.69%. **Conclusion:** The present study explains the importance of knowing the diverse modes of presentation of malaria. Early diagnosis, early referral and early initiation of ACT will decrease the mortality and morbidity.*

**Keywords:** Malaria, Severe Malaria, Atypical manifestations, ACT.

## 1. Background

Malaria is a fast emerging as number one infectious killer across the globe. It's being transmitted across 108 countries containing 3 billion populations (40% of world's population) with more than 3 million deaths per year<sup>1</sup>. India is endemic to malaria with an estimated 70 -100 million cases per year with 45-50% of them due to plasmodium falciparum (Pf) malariae<sup>2</sup>. Pf is responsible for majority of severe and fatal malaria<sup>3</sup> and even deaths due to Plasmodium vivax mono infection have been reported<sup>4</sup>.

Symptoms and signs are highly non specific, vary at times and quite confusing as malaria is a multisystem disease. Classical presentation is less common and is seen only in 50-70% of cases. Appropriate clinical diagnosis varies from area to area according to intensity of transmission, MP species, drug resistance status<sup>5</sup> and other prevailing causes of fever and healthcare infrastructure.

Atypical manifestations are common and add confusion to the diagnosis, as malaria can mimic any pyrexial illness and form differential diagnosis for all fevers in endemic areas especially in India. Lack of awareness of atypical features leads to misdiagnosis or late diagnosis of malaria resulting in increased mortality and morbidity. This is an hospital based cross sectional study aimed to study the atypical manifestations of malaria – varied presentation, diagnosis, complications and treatment outcomes.

## 2. Materials and Methods

### 2.1 Study Design

The study was conducted at Victoria hospital, attached to Bangalore Medical College and Research Institute, Bangalore, is a tertiary referral centre to where patients are being referred from all the districts of Karnataka state and also neighbouring states- Andhra Pradesh and Tamilnadu, in south India.

This was a hospital based cross sectional study done in all hospitalized fever patients whose blood smear for malarial parasite was positive or fever patients who did not have any other definite diagnosis but responded to anti malarials, between 01.04.11 to 31.03.12.

### Inclusion criteria

- All fever cases who responded to Artesunate / antimalarials
- All blood smear positive cases for MP
- Age more than 16 years

### Exclusion criteria

- Fever cases with a definite diagnosis other than malaria
- Fever cases not responded to artesunate / antimalarials
- Age less than 16 years

## 3. Results

A total of 369 hospitalized fever patients were included in the study, out of which 238 (64.5%) were males and 131(35.5%) were females. Majority were between the age

groups of 21-50 years contributing to 58.84% of all cases with high incidence between the age of 31-40 years. Majority of the cases referred (78.86%) and the others were direct admissions (21.14%). Great majority of patients were from rural places (68.30%). The number of fever patients requiring admission increased from the month of May onwards with maximum admissions in August, September, October (52.03%).

Symptom analysis at admission showed that 357 patients (96.7%) had fever ranging between 2 days to 4 weeks and only 46.4% (171) had classical fever with chills pattern. Atypical fever in the form of type, duration, quality was present in 53.66%. The other important atypical presentations noted were jaundice (14.7%), LOC/altered sensorium (11.12%), PUO (7.6%), pain abdomen (6%), vomiting (5.7%), headache (5.1%), breathlessness (4.6%), cough (4.1%), convulsions (3.8%).

General physical signs at admission were -100% patients had temperature, 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 9.2%.

On routine investigations mean Hb% was 9.26 +/- 2.2 gm/dL, thrombocytopenia in 12.5% patients, increased platelet count in 0.8% patients, abnormal LFT in 18.68% patients and abnormal RFT in 3%, abnormal chest x ray in 1.2%, abnormal ECG and 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 septicemia and MOD.

Blood smear was positive for MP in 96 patients (26.01%) out of which 57 (15.44%) were PV, 33 (8.94%) were PF, and 06 (1.62%) were mixed infection.

Majority of the patients 315 (87.5%) visited Medicine department and the rest (about 12.5%) visited various other departments from Neurology to OBG with different atypical presentations. Most common visits being - to Neurology - 16 patients, Surgery - 8 patients, OB&G - 6 patients, Orthopedics - 4 patients, ENT - 4 patients. Comorbid conditions were commonly noted in these patients - 149 patients (41%) and important among them were Diabetes 44 (11.92%), Hypertension 32 (8.67%), osteoarthritis 22 (5.96%), COPD 14 (3.79%) and multiple comorbidities in 16 (4.33%) patients. Among other infections along with malaria, dengue was present in 8 cases (serology tests), enteric fever in 4 patients (Widal/blood culture being positive), HIV positive in 4 cases (serology).

All the 369 patients received combination of antimalarial treatment with artemesinin based combination (ACT). 146 patients received ACT and appropriate antibiotics also (ceftriaxone in 130 patients, ciprofloxacin in 16 patients). 6 patients received artesunate and doxycycline. 3 patients were treated in medical ICU with ventilatory support and 6 patients underwent hemodialysis at nephrology centre, inside Victoria hospital complex. 4 patients received blood transfusion and 2 patients received platelet transfusion. Out of 369 patients, 9 patients went against medical advice (2.44%) and 21 (5.69%) expired and the

remaining 339 (91.87%) patients recovered. The duration of hospitalization was between 6 days to 24 days.

#### 4. Discussion

This cross sectional study showed that males (64.5%) were more affected than females (35.5%). Study also showed rural dominance (68.30%) compared to urban (31.70%). Majority of the patients were between the age groups 21-50 years with high incidence between the age groups of 21-40 years (41.46%). A tertiary care centre, like ours, received cases around the year, especially complicated ones<sup>6</sup> being referred from all around the state and the bordering states. Seasonal spikes of incidence were noted especially in the post monsoon period (Aug-October) though geographical heterogeneity and seasonal variation influence the prevalence of Malaria<sup>7</sup>.

Smear positivity for Malarial parasite was seen only in 26.01%, while majority of patients were smear negative despite repeated smear examinations and all responded to antimalarials. 15.44% were P.vivax positive and 8.94% were P.falciparum positive. 1.62% had both P.vivax and P.falciparum positivity.

Fever was the commonest presentation<sup>7</sup> seen in 96.74% patients. Typical and classical fever and chills were seen only in 46.34% patients. Atypical fever was recorded with respect to duration and severity in 41.46% patients, while LOC and altered sensorium was recorded in 11.12% of patients. Cerebral malaria was noted in 9.2% patients while the reported incidence of cerebral malaria is between 2.55% and 3.05% in endemic areas<sup>8</sup>.

In one study from Orissa 86.7% had anemia and 10% had severe anemia<sup>9</sup> but in our study anemia was noted in 42% of cases. Thrombocytopenia has been reported in 40.5% - 85%<sup>10</sup> patients of malaria, but in our study thrombocytopenia was noted in 12.5% patients. Hyperbilirubinemia with jaundice was recorded in 14.7% of patients. Deranged LFT and RFT were recorded in 26% and 22% respectively while deranged RFT were recorded in 27.70% of patients in Mahakio et al, Behrampur, Orissa (1983)<sup>11</sup>. Other atypical manifestations noted were cough (4.1%), breathlessness (4.6%), polyarthritis (1.7%), vertigo (2.2%), hemoptysis (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 due to the release of cytokine (TNF alpha, IL-1 and IL-6)<sup>12</sup>. Hence malaria cases had varied symptoms and presented in various departments. 315 patients (87.5%) visited medicine/emergency medicine department while rest (12.5%) visited all other departments - neurology 16, surgery 8, OBG 6, ENT 4, Orthopedics 4, nephrology 3, ART Centre 3, Ophthalmology 2, and Psychiatry 1, with various symptoms. After blood smear becoming positive for MP or persistence of fever with other symptoms despite antibiotics, they were later referred to the department of Medicine. In total 291 (78.86%) were referred patients and only 78 (21.14%) were direct admissions as this is a tertiary care

centre. Confirmed Malaria patients (smear positive) were treated with antimalarials - with artemesinin based combination (ACT) and the suspected malaria patients were treated with ACT and other antibiotics like ceftriaxone, ciprofloxacin, doxycycline etc. Suspected malaria patients (h/o fever, not responding to routine antibiotics and without a proper diagnosis) including patients referred from other departments for fever work up improved dramatically with ACT.

In our 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 MODS 5, severe thrombocytopenia 2 and ARDS in 3 patients. Among the deaths <sup>9</sup> were Pf positive and 12 were smear negative patients. The present study has less mortality compared to 33.5% in a large study done in Bikaner, Rajasthan.

Malaria is a great imitator 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 often with over treatment using antimalarials (ACT) especially in endemic areas will help to control mortality and morbidity in malarial patients.

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