



Original Article

A Prospective Study of Clinical Profile of Patients Diagnosed with Malaria

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Abstract

Background: Malaria is a major public health problem in India. Previous reports suggest that India reported 1.6 million cases and 1100 malaria deaths in the year 2015.

Aims and Objectives: To study the clinical profile of patients of malarial coming to a tertiary care hospital.

Materials and Methods: Hundred malaria patients were studied in the Department of Medicine, J.A. Group of Hospitals, GRMC Gwalior. Data on presenting complaints and general examination was performed. Complete haemogram, liver function test (serum bilirubin, SGOT, SGPT, ALP), bleeding time, clotting time was estimated.

Results: Maximum patients were in the age group of ≤ 30 years (56%) with equal distribution of gender. Majority had (19%) tachycardia, 9% had hypotension, 5% had tachypnea and 6% had hypoglycemia. Leucocytopenia was reported in 25% and leucocytosis in 2% patients. Majority (20%) had serum bilirubin of $> 2\text{mg/dl}$, SGPT was increased in 35%, blood urea was increased in 7% and creatinine was increased in 6% malaria patients. Distribution of hepatomegaly and splenomegaly was equally distributed among normal and abnormal SGPT and hemoglobin values.

Conclusion: Malaria was most common in working age group; fever, headache, nausea and vomiting were the most common symptoms. Pallor and icterus was the most common signs. An early diagnosis and treatment goes a long way in preventing avoidable deaths due to malaria.

Keywords: Leucocytopenia, protozoal disease, mortality, liver function test, organomegaly.

Introduction

Malaria is a protozoal disease caused by Plasmodium species (*P. vivax*, *P. falciparum*, *P. ovale* and *P. malariae*) is one of the major global health problems. The bite of infected female anopheles' mosquito mainly transmits the disease. The disease is distributed through the tropics and

sub tropics from 40° south to 60° north, and occurs mainly at altitudes below 1500 meters.¹

Malaria is a major public health problem in India and one which contributes significantly to the overall malaria burden in Southeast Asia. The National Vector Borne Disease Control Program (NVBDCP) of India reported 1.6 million cases

and 1100 malaria deaths in 2009. Some experts argue that this is a serious underestimation and that the actual number of malaria cases per year is likely between 9 and 50 times greater, with an approximate 13-fold underestimation of malariarelatedmortality.²

Symptoms of malaria are generally non-specific and most commonly consist of fever, malaise, weakness, gastrointestinal complaints (nausea, vomiting, and diarrhea), neurologic complaints (dizziness, confusion, disorientation, and coma), headache, backpain, myalgia, chills, and/or cough. The diagnosis of malaria should also be considered in any person with fever of unknown origin regardless of travel history.³ Vivax malaria is no longer regarded as benign species as was believed earlier.⁴

This study was designed to assess the clinical features and laboratory parameters in hospitalized patients of malaria.

Materials and Methods

Present prospective study was performed on 100 malaria patients at the Department of Medicine, J.A. Group of Hospitals, GRMC Gwalior.

All patient age >18 years with malaria confirmed by rapid diagnostic kit and fever proved to be malaria either by peripheral smear examination (both thin and thick smear) or rapid diagnostic kit were included.

All patients age <18 years, patients presented with LFT and RFT derangements other than malaria, previous hematological disorders and if subjects not giving consent were excluded from the present study.

Data on presenting complaints and general examination was performed. All patient were studied on peripheral blood smear (thin and thick smear) for malaria parasite and card test (rapid diagnostic kit). Complete haemogram, PS for MP/MP by FM, liver function test (e.g. serum bilirubin [Total & Direct], SGOT, SGPT, ALP), bleeding time, clotting time was estimated.

All the data analysis was done using IBM SPSS ver. 20 Software. Cross tabulation and frequency

distribution was used to prepare tables. Microsoft office 2010 was used to prepare the graphs.

Results

Maximum patients were in the age group of ≤ 30 years (56%) followed by 31-40 years (17%) and 41-50 years (14%). There was an equal distribution of gender in present study (50% in each).

Table 1: Symptoms distribution in malaria patients

Symptoms	No of patients	Percentage
Fever	98	98
Jaundice	18	18
Headache	33	33
Giddiness	17	17
Myalgia	17	17
Fatigue	16	16
Nausea/Vomiting	29	29
Pain In Abdomen	14	14
Cough	12	12
Altered Sensorium	4	4
Convulsion	1	1
B/L Pedal Edema/Facial Puffiness	1	1
Breathlessness	3	3
Decrease Appetite	2	2
Diarrhea	3	3
Sleep Decrease	1	1
Tingling Sensation	1	1

Most common presenting symptoms in present study was Fever (98%) followed by headache in 33%, Nausea and vomiting in 29%, jaundice in 18%, giddiness in 17% and myalgia in 17%. Most common sign in Malaria patients was pallor (37%) followed by icterus in 20%. Maximum Malaria patients had CNS GC score of 15 (94%) followed by 13 (4%). Splenomegaly was present in 40% of the patients followed by hepatomegaly in 13%.

Table 2: Various Parameters In Malaria Patients

Laboratory parameters	No of patients	Percentage	
Blood pressure	Hypertension	2	2
	Hypotension	9	9
	Normal	89	89
HR	Tachycardia	19	19
	Normal	81	81
BS	Crept	1	1
	Normal	99	99
RR	Tachpnoea	5	5
	Normal	95	95
RBS	Hypoglycemia	6	6
	Normal	94	94

HR; heart rate, RR; respiratory rate, RBS; random blood sugar

Table 3: Blood investigation in Malaria patients

Blood investigation	No of patients	Percentage
Hb	Mild	13
	Moderate	42
	Severe	35
	Normal	10
TLC	Leukocytopenia	25
	Leukocytosis	2
	normal	73
BT	Increased	4
	Normal	96
CT	Increased	4
	Normal	96

Hb; hemoglobin, TLC; total leukocyte count, BT; bleeding time, CT; clotting time

Out of 100 patients, 20% had serum bilirubin of >2mg/dl followed by 10% patients who had between 1-2 mg/dl. SGPT was increased in 35%, SAP was increased in 15%, Blood urea was increased in 7% and creatinine was increased in 6% malaria patients.

While comparing SGPT with the hepatomegaly, we found that out of 35 patients in whom SGPT was increased 7 patients had hepatomegaly. Though the comparison was insignificant ($p=0.127$). While comparing anemia with the splenomegaly, we found that out of 35 patients with severe anemiasplenomegaly, was reported in 18 patients, of the 42 patients with moderate anemia, 14 had splenomegaly and of the 13 patients with mild anemia, 6 had splenomegaly. The comparison was insignificant ($p=0.120$). Abnormal serum electrolyte was present in only 1% patient.

Discussion

Globally the impact of the disease is variable and affects mainly African countries and South East Asian countries. As per WHO global report, it is distributed in 100 countries throughout the world. India is also a home for the malaria reporting 1.13 million cases of malaria with 287 deaths⁵

In present study maximum patients were in the age group of ≤ 30 years (56%). In agreement to present study Sarvepalli et al⁵ evaluated the clinical profile of malarial cases with associated complications and hematological profile of 400 malaria cases and reported that the most common age group was 41-50 years which also coincides

with the findings of Srinivas et al but Preetham et al in their study mentioned 21-40 years as the most common age group.^{6,7} This can be explained that the distribution of cases is variable from place to place and region to region based on the vector of transmission. The age group that is affected is predominantly the working age which is exposed mostly to fields and outdoor areas. Deshwal et al reported that the average age was 31.49 years in vivax malaria, youngest being 12 yrs and oldest was of 92 yrs. Maximum (51.56%) patients were in 21-30 age group.⁴

There was an equal distribution of gender in present study (50% in each). Contrary to present study Deshwal et al in similar study reported a male preponderance (79%).⁴

In present study while comparing SGPT with the hepatomegaly, we found that out of 35 patients in whom SGPT was increased 7 patients had hepatomegaly, though the comparison was insignificant. In present study hepatomegaly was reported in 13% patients. Hepatomegaly was noticed in 4.56% of vivax, 8.34% of falciparum and 7.75% patients of mixed malaria in a study of Deshwal et al.⁴ Present study findings are also similar with some other studies from Colombia (16%)⁸ and Thailand (8.2%)⁹. Hepatomegaly was noticed in 41% of cases of malaria by Sarvepalli et al⁵, which is in agreement to present study findings. Similar reports were generated by Harris VK et al.¹⁰

While comparing anemia with the splenomegaly, we found that out of 35 patients with severe anemiasplenomegaly was reported in 18 patients, of the 42 patients with moderate anemia, 14 had splenomegaly and of the 13 patients with mild anemia, 6 had splenomegaly. The comparison was insignificant ($p=0.120$). Deshwal et al found that splenomegaly was noticed in 24.84% patients of vivax and 34.5% of falciparum malaria.⁴ Various international studies have shown splenomegaly in 6.5% to 13% in their patients.^{8,9,11} Splenomegaly was reported in 59% of vivax, 68.8% of falciparum and 73.6% in a study from South East Asia.¹² Sarvepalli et al⁵ reported

splenomegaly in 71% of cases. Out of 284 cases of splenomegaly, 174 were seen in falciparum malaria and 110 in vivax malaria. Contrary to presents study, Harris et al reported more cases of splenomegaly in falciparum malaria than vivax malaria.¹⁰

Cross sectional nature and small sample size were the main limitations of the present study. A large randomized clinical trial is needed to strengthen the present study findings.

Conclusion

Based on the results we found that malaria was most common in working age group people. Fever, headache, nausea and vomiting were the most common symptoms. Pallor and icterus was the most common signs. Most of the cases of malaria are likely to be missed if the clinicians keep on looking for the typical intermittent fever with chills/rigors and a palpable spleen. Any patient with leucopenia, headache, and abdomen pain deserves exclusion of malaria. An early diagnosis and treatment goes a long way in preventing avoidable deaths due to malaria.

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