

A Study of Clinical Profile of Malaria in a Tertiary Care Centre in Northern India.



Medical Science

KEYWORDS : malaria, anemia, splenomegaly

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ABSTRACT

Background:

Malaria is a protozoan disease transmitted by the bite of infected Anopheles mosquito. Each year, there are an estimated 250 million cases of malaria leading to approximately one million deaths, mostly in children under five years of age.

Methodology:

This hospital based cross sectional study was done on 112 confirmed cases of malaria (either by peripheral smear or rapid diagnostic test) more than 13 years of age, admitted in Rohilkhand Medical College and Hospital, Bareilly, from January 2013 to December 2013. A case sheet proforma was prepared and data (demographic profile, clinical feature, investigation, treatment, and complication) from all indoor patients was collected and analyzed.

Results:

Out of 112 patients, 63 (56.25%) were males and 49 (43.75%) were females. Most of the patients were between the age group 21-39 years with the highest incidence between the age group of 21-30. Fever was the most common symptom followed by chills and rigors. Anemia was present in 60 (53.57%) patients, out of which 5 (8.33%) patients had severe anemia. Thrombocytopenia was present in 26 (23.21%) patients. Abnormal liver function tests were observed in 37 (33.03%) subjects while abnormal kidney function tests were observed in 25 (22.3%) patients.

Conclusion:

Malaria is responsible for major health concern in this region, particularly in rainy season and is found to affect comparatively the younger adult population. P.falciparum was the major parasite type causing malaria.

Introduction:

Malaria is a protozoan disease transmitted by the bite of infected Anopheles mosquito. Malaria is one of the most common infectious diseases and a great public health problem worldwide, particularly in Africa and South Asia. About three billion people are at risk of infection in 109 countries. Each year, there are an estimated 250 million cases of malaria leading to approximately one million deaths, mostly in children under five years of age. The organism that causes the most dangerous form of malaria is a microscopic parasite called Plasmodium falciparum (PF).

This parasite is transmitted by mosquito species belonging to the Anopheles genus and only by females of those species.

Malaria is a disease of global importance that results in 300-500 million cases annually. Forty percent of the world population lives in malaria-endemic areas[1], 1.5-2 million deaths, mostly children (<5years), occur annually[2]. Plasmodium falciparum may infect humans at conception through adulthood.[3] Approximately, 2.4 million malaria cases are reported annually from South Asia, of which 75% are reported in India alone.[4] P.falciparum infections have dramatically increased in central India in recent years.[5,6]

Five species of the genus Plasmodium cause nearly all malarial infections in human. These are P.falciparum, P.vivax, P.ovale, P.malariae and P.knowlesi (the monkey parasite). Almost all deaths are caused by falciparum and vivax malaria while P.ovale and P.malariae are the milder forms.

Malaria can present with non specific symptoms like headache, fatigue, joint pain, vomiting, abdominal discomfort, myalgia followed by fever to severe complications like jaundice, acute renal failure (ARF), anaemia, shock, convulsions and coma.

Hence, this study was performed to evaluate the clinical profile

of malaria in a tertiary care centre.

Material and Methods:

This study was conducted in the Department of Medicine, Rohilkhand Medical College and Hospital, Bareilly. Rohilkhand Medical College is a tertiary care teaching hospital with a well equipped state of art, infrastructure and a well trained human resource. It caters mainly the population of district Bareilly and adjoining areas

The study was conducted on patients attending (OPD, IPD and casualty) of Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh during the period of January 2013 – December 2013.

112 cases were included in the study that were diagnosed as positive cases for malaria, either infected with P. falciparum or P. vivax or both in the Parasitology/Microbiology department of RMCH, Bareilly, U.P.

Criteria for selection of patients

1. All patients with history and investigations suggestive of acute malaria, either P.falciparum or P.vivax or both.
2. All patients with history of fever and associated complications suggestive of malarial etiology.
3. None of them were having malignant disease, immunodeficiency, connective tissue disorder (auto immune disorder), terminal cases and multi organ failure due to sepsis.
4. None of them were receiving any cytotoxic drugs or radio therapy known to cause immunosuppression.
5. Patients referred from other departments for evaluation of malaria.

Exclusion criteria

1. Patients reported negative for malaria parasite.
2. Patients not willing to give consent.
3. Patients below age of 13 years.

Aim of this study was to study clinical spectrum of malaria and complications of malaria in all the patients attending Rohilkhand Medical College and Hospital and to compare the diagnostic and prognostic utility of rapid card test with conventional thick and thin films.

Detailed clinical history including name, age, sex, occupation and symptoms with duration were recorded as per proforma. Patients were specifically asked about symptoms suggestive of complications.

Eg: abnormal behavior, any abnormal movements, decreased urine output, severe pallor, jaundice, black urine, etc. Negative history was taken to rule out any malignancy, immunodeficiency disorder, auto immune disorder was taken.

Detailed systemic examination of abdomen, nervous system, chest and cardiovascular system was carried out. Patients were subjected to laboratory investigations.

Results:

The study was conducted on patients attending Rohilkhand Medical College and Hospital (OPD, IPD, and Casualty) from January 2013 – December 2013.

112 cases were included in the study who were diagnosed as positive cases for malaria, either infected with *P. falciparum* or *P. vivax* in the Parasitology Department of Microbiology, Rohilkhand Medical College and Hospital, Bareilly, U.P.

Table 1: Age frequency table

Age Group	Frequency	Percent (%)
<20 years	6	5.35%
20-39 years	60	53.57%
40-59 years	43	38.39%
60-79 years	2	1.78%
≥80 years	1	0.89%
Total	112	100

Table 2: Sex distribution

Sex	No. of patient	Percentage
Female	49	43.75%
Male	63	56.25%
Total	112	100.0

Table 3: Diagnosis

Diagnosis	No. of patient	Percentage
<i>Pfalciparum</i>	68	60.71%
<i>Pvivax</i>	34	30.35%
Total	112	100.0

Table 4: Clinical manifestations in study group

Manifestations	No. of Patient (n=112)	Percentage
Fever	108	96.4%
Chills and rigors	104	92.8%
Easy fatigability	100	89.28%
Nausea and vomiting	55	49.10%
Headache	29	25.89%
Abdominal pain	18	16.07%
Loose motions	11	9.82%
Breathlessness	41	36.60%
Cough	9	8.03%
Altered sensorium	6	5.35%
Coma	2	1.78%
Seizures	2	1.78%
Pallor	48	42.82%
Icterus	31	27.67%
Pedal edema	12	10.71%
Splenomegaly	55	49.10%
Hepatomegaly	34	30.35%
Respiratory manifestations (rhonchi and crepitations)	19	16.96%
Haemic murmur	06	5.35%

Table 5: Showing incidence of various complications in malaria

Complications	No. of subjects (n=112)	Percentage
Anemia	60	53.57%
Hepatitis	37	33.03%
Cerebral malaria	15	13.39%
Renal failure	25	22.3%
Acidosis	08	7.14%
Hypoglycemia	25	22.32%
Shock	12	10.71%
Hemoglobinuria	5	4.64%
Thrombocytopenia	26	23.21%
Hyperpyrexia	40	35.71%
Electrolyte imbalance	12	10.71%
Retinopathy	2	1.78%
ARDS	6	5.35%
Bleeding	4	3.57%

Seizures	2	1.78%
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Table 6: Final outcome of study subjects

Outcome	<i>P. falciparum</i> (n=68)	<i>P. vivax</i> (n=34)
Mortality	4(5.88%)	1(2.94%)
Cured	40(58.8%)	26(76.47%)
Residual Complications on Discharge	24(35.29%)	7(20.58%)

Discussion:

Out of 112 patients, 63 (56.25%) were male and 49 (43.75%) were female. Most of the patients were in the age group of 20-39 years of age followed by 40- 59 years.

In our present study, the percentage of isolated falciparum and Vivax were 60.71% and 30.35% respectively. In the study by Reddy et al there was high incidence of vivax malaria i.e. 61.2% and falciparum was 36.8%, these observations suggest that incidence of particular species varies with geographical area. [7] In a study by Rojanasthien et al the prevalence of falciparum was 76.2% whereas vivax malaria was just 23.8%. [8]

Fever is the most common symptom in 108 (96.04%) patients and majority of the patients presented within a week of onset of symptoms. In the study conducted by Mehta et al fever was present in 100% of the patients and it was present in 100% in the studies conducted by Malhotra et al. [9, 10] Nausea and vomiting was observed in 49.10% of the patients in our study. It was 37.36% and 4.35% in study of Muddaiah et al and Rathod et al respectively. [11, 12] in our study altered sensorium was in only 5.35% of patients. Muddaiah et al and Rathod et al reported 4.21% and 1.9% cases of altered sensorium in their studies respectively. [11, 12]

Pallor was noted in 42.82% of patients in our study (table 4). It correlates with study by Sharma et al. [13] Icterus was noted in 27.67% of the patients in our study whereas it was seen in 25% of patients by Malhotra et al. [10] Hepatomegaly and splenomegaly was seen in 30.35% and 49.10% respectively. Splenomegaly was observed in 60% cases in study conducted by Nand et al. [14]

Anemia is a common complication in malarial infection. In our study, out of 112, 60(53.57%) patients were suffering from anemia. The overall incidence of anemia was higher in studies conducted by Sharma et al where the incident was 86.7%. [13] In our study, hepatitis was noted in 37 (33.03%) patients. This is showing increasing incidence of hepatitis in malaria patients. Study by Murthy et al, noted hepatitis in

21% cases in *P. falciparum* malaria in adults, the reported incidence of hyperbilirubinemia in severe malaria varies from 32-37%. [15]

In the present Study, incidence of cerebral malaria was found to be 13.39% i.e. out of 112 Patient, 15 developed this complications. Majority of them were *P. falciparum* positive. This is consistent from 2-55%. [6]

Acute renal failure is a common complication in malaria infection. In our study, out of 112 subjects of malaria, 25 (22.3%) developed renal failure.

Thrombocytopenia was present in 23.21% of the case in the present study (table 5). It was inconsistent with study of Rathod et al who had incidence of 79.13%. [12]

Out of 112 patients, 40(35.71%) were found to have hyperpyrexia. In one study, hyperpyrexia was present in 42.2% of the malaria cases. (Rowena S. Tagle, et al 1989).

Out of 68 *P. falciparum* malaria patients, (4.88%) died, 40 (58.8%) were cured while 24(35.29%) had residual complications on discharge. In *P.vivax* group, out of 34 patients, 1(2.94%) died, 26 (76.47%) were cured while 7 (20.58%) were discharged with residual complications.

The majority of the deaths occurred in the first few days of hospitalization. Most deaths of severe malaria especially cerebral malaria occurred within 24 - 48 hours of admission. Similar findings were described by Ala - Odera VM et al. [17]

Conclusion:

P. Falciparum was the most common species of malaria followed by *P. vivax*. Malaria was found to be more common in 20-39 years of age group.

Fever was found to be the most common presenting feature of malaria. Splenomegaly was the most common sign among malaria patients. Anemia was found to be the most common complication of malaria followed by hepatitis, thrombocytopenia.

Cerebral malaria was found in 13.39% of patients. Early diagnosis, anticipation of complications, close monitoring of vital parameters and combination therapy to overcome drug resistance perhaps helped to curtail the mortality.

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