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# Analysis of clinical profile of malaria patients attending a tertiary care centre in Central India

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**Abstract**---Background: Malaria is the commonest parasitic infection in India. A shift in the clinical profile in patients with complicated malaria has been observed with multiple organ dysfunctions becoming a common feature. Aim: This study is aimed to evaluate the clinical profile of malaria in a tertiary care hospital, central India. Material and Methods: A prospective study was carried out at a tertiary care hospital of a medical college in M.P. India. Patients of 18 years age or above who were smear positive or antigen positive were included in the study. Results: A total of 230 malaria cases were present, of which 54.8% were males. The mean age of the participants was 34.7 years. Prevalence was common in rural (64.8%) and lower socio-economic class (46.1%) population. Fever weakness/nausea and headache were the most common presenting complaints (94.3% and 85.7% and 71.3% respectively) and pallor, jaundice and hepato splenomegaly were the foremost sign. *Plasmodium Vivax* (53%) was the most common infection. Conclusion: Malaria has a male preponderance. Fever, headache, weakness, pallor and splenomegaly were the common clinical presentation.

**Keywords**---Malaria, *P. Vivax*, *P. falciparum*, clinical profile.

**Introduction**

Malaria is a highly endemic protozoal disease in India caused by *Plasmodium* species largely by *P. vivax* and *P. falciparum* and transmitted by the bite of female anopheles mosquito [1-2] In India, the incidence of malaria and associated

mortality has declined. The API (annual parasite index) has reduced from 3.29% in 1995 to 0.9% in 2015. But still, India contributes around 80-90 % of total malaria cases in SEAR. *P. vivax* constitutes around 50% of total malarial cases in India [3]. Due to increasing drug resistance, there is an absolute need for accurate diagnosis and rational treatment of malaria [4]. Malaria remains a major public health problem in India and one of the most common parasitic infections. Lack of proper health infrastructure, inability to control the disease in endemic areas, and movement of the population are some of the factors responsible for failure to curb malaria [5]. The malaria is classically characterized by fever with chills and rigors, occurring intermittently with splenomegaly and anaemia. Apart from this classical clinical presentation there may be involvement of central nervous system in cerebral malaria, gastrointestinal involvement in algid malaria, respiratory involvement in the form of acute pulmonary insufficiency [6-7]. The proportion of *P. Vivax* and *P. falciparum* varies in different parts of India. *P. Vivax* causes majority of burden in India, while *P. falciparum* is prevalent infection in Africa [8]. Malaria ('mal'=bad + 'air') imposes great socio-economic burden on humanity, and with six other diseases (diarrhea, HIV/AIDS, tuberculosis, measles, hepatitis B and pneumonia) accounts for 85% of global infectious diseases burden [9]. The typical complications seen in *P. falciparum* malaria are not usually found in *P. Vivax* mono infections. However, during the past few years, the trend in the clinical manifestations of *P. Vivax* malaria has been changing. Several isolated studies from India have reported severe complicated cases of *P. Vivax* malaria [10-11]. Cerebral malaria, thrombocytopenia, black water fever, pernicious anemia and algid malaria were the most common complications seen in malaria [12]. The aim of present study was undertaken to examine the changing clinical pattern of malaria with special attention to atypical presentations.

### **Material and Methods**

This prospective study was carried out at tertiary care teaching hospital in Datia, M.P. This study included consenting patients of age 18 years and above with either a smear positive for plasmodium species or malarial antigen positive by RDT (rapid diagnostic test). Categorization of severe malaria and treatment was carried out according to WHO guidelines [13].

Diagnostic methods used were conventional Thick & thin Peripheral smear stained with Leishman stain, examined under oil immersion. The slide was considered negative when there were no parasites in 100 HPF. Rapid diagnostic tests were based on detection of specific plasmodium antigen, LDH (optimal test) for Vivax & HRP2 for falciparum. Apart from peripheral blood film & rapid diagnostic test other relevant lab investigations were also done. The details regarding patient's age, sex, residence and occupation along with clinical profile including, signs and symptoms, method of diagnosis, treatment and complications were obtained. Data was entered in predesigned Microsoft (MS) excel sheet. Data was analyzed using Statistical package for social sciences (SPSS) version 23.0

Table 1: Socio-demographic profile of the study participants (n=230)

Socio-demographic Characteristics	No of patients	Percentage	
Gender	Male	126	54.8%
	Female	104	45.2%
Age (in years)	18-30	47	20.5%
	31-40	50	21.7%
	41-50	58	25.2%
	51-60	41	17.8%
	Above 60	34	14.8%
Geographical distribution	Rural	149	64.8%
	Urban	81	35.2%
Socio-economic status	Lower	106	46.1%
	Middle	74	32.2%
	Upper	50	21.7%

Table 2: Peripheral smear results with species differentiation among the malaria cases (n=230)

Species of plasmodium	No of patients	Percentage
P. Vivax	122	53%
P. falciparum	65	28.3%
Mixed infection	43	18.7%

Table 3: Symptoms of malaria patients in this study (n=230)

Signs and Symptoms	No of patients	Percentage
Fever	217	94.3%
Vomiting	111	48.3%
Generalized weakness nausea/anorexia	197	85.7%
Headache	164	71.3%
Pain in abdomen	69	30%
Diarrhea	42	18.3%
Seizure	12	5.2%
Altered sensorium	25	10.9%
Breathlessness	23	10%

Table 4: Sign of malaria patients in this study (n=230)

Signs and Symptoms	No of patients	Percentage
Pallor	119	51.7%
Jaundice	104	45.2%
Hepatomegaly	57	24.8%
Splenomegaly	83	36.1%
Hypotension	40	17.4%
Rashes	36	15.7%
Tachycardia	98	42.6%

## Discussion

Malaria is the largest vector-borne protozoan disease, more prevalent in developing countries, like India. In our study the most common plasmodium species causing malaria was *P. Vivax* (53%) followed by *P. falciparum* (28.3%) and *mixed* malaria species (18.7%), which was similar to findings by Erhart et al [14], Jadhav et al [15] and Chery L et al [16] whereas earlier studies done by Bashawri et al [17] reported higher *P. falciparum* prevalence. Present study observed prevalence of malaria was more in male patients than female, comparable with the Ronak Bhalodia et al [18], Goyal et al [19] and Kumari M et al [20]. This may be due to the increased outdoor activities in males, and thus more exposure to mosquitoes.

Majority of our patients were between 31-50 yrs (46.9%), which were consistence with the study conducted by Murthy RN et al [21] and Antony J et al [22] whereas Jain N P et al [23] and Murthy GL et al [24] reported a large number of patients belonged to the relatively younger group. Many studies conducted on malaria patients also increased the incidence of malaria in the middle-aged people which may be due to increased exposure of malaria parasite during their work hours. Current study found prevalence of malaria was more in rural areas than urban, concordance with the Gupta B K et al [25] and Shelat, et al [26] Among the clinical presentation of malaria, most common symptom was fever in 94,3% of cases, similar to many other studies like: Pavithra H et al [27], Waris, R et al [28], Minhas A et al [29] and Kumar A et al [30], reported presentation of fever were 94.8%, 100%, 95 and 96.7% respectively.

Majority of patients have reported fever as a major clinical presenting feature. Patients presents with typical complaints of malaria such as fever, chills, rigors. Headache and body ache, accordance to the Rathod SN et al [31]. Among clinical sign pf malaria most common was pallor (51.7%) constant with the Kadam et al [32]. Most common clinical presentation observed in our study were fever, weakness, anorexia, vomiting, nausea and headache, concordance with the patil C et al [33]. Common clinical signs of malaria in current study were pallor, Icterus, splenomegaly, hepatomegaly and hypotension, accordance with the Singh P, et al [34] and Hirani MM et al [35].

## Conclusion

Malaria is still at rampant in India with debilitating morbidity and mortality. Studying the clinical profile of malaria with proper antimalarial drug treatment helps to curb down the complications of malaria. Every healthcare facility should follow national and international guidelines and form its in-hospital guidelines regarding proper antimalarial selection. This helps to reduce morbidity and mortality of malaria and helps in the sustained economic growth of the nation.

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