Original Research Article

A study of clinical profile of patients with malaria in tertiary care hospital

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Abstract

Background: Malaria a tropical disease has a wide clinical spectrum ranging from uncomplicated disease to a fatal one. The objectives were to study clinical profile of Malaria with special reference to its complications and outcome.
Materials and methods: A study was carried out in a tertiary care hospital including total of 50 patients diagnosed with P. *Vivax* or P. *Falciparum* Malaria. Data on patients' clinical details with investigations, complications, and outcome was studied.
Results: Out of 50 patients (37 male and 13 female), 41 had P. *Vivax* and 9 had P. *Falciparum* Malaria. Total 3 patients were complicated; two had cerebral malaria due to P.falciparum and one had multi organ failure due to P. vivax which eventually succumbed.
Conclusions: Clinical profile of Malaria was studied which suggest, P.falciparum malaria was more complicated; which comprises cerebral complications, renal complication, hepato-biliary and respiratory complications leading to increased morbidity and mortality. It was observed that P. vivax had better outcome but it can also present with serious and life-threatening complication.

Key words

Cerebral malaria, Oliguria, Leukopenia, Thrombocytopenia.

Introduction

Malaria remains the most important human parasitic infection globally and continues to pose a major public health threat in India, there are four main types of malaria in India namely Plasmodium falciparum, P.vivax, P.ovale and P.malaria particularly of which P.falciparum and P.vivax are common but Plasmodium falciparum which is prone to complications. The present study was aimed to evaluate the different modes of clinical presentation and systemic complications and outcome of malaria. P.falciparum malaria is a medical emergency and should always be considered in the differential diagnosis of patients presenting with fever, anemia and splenomegaly and timely intervention may prevent the progression; hence reduce the mortality.

Materials and methods

A study was carried out from duration from 1st July to 31st August 2018, on 50 patients were admitted in medicine general ward, medical and intensive care unit of civil hospital, Ahmedabad.

Inclusion criteria

- Age more than 11 years.
- Peripheral Smear positive with P.falciparum and P.vivax.
- Rapid diagnostic test (RDT) suggestive P.vivax and P.falciparum antigen.

Exclusion criteria:

- Age less than 11 years

The patients were selected according to inclusion and exclusion criteria. All information about diagnosis based on peripheral smear and RDT, duration of hospital stays, laboratory investigation and patient outcome in form of discharge and deaths. All patients were treated as per standard treatment protocol. We did CBC, peripheral smear/rapid diagnostic kit for malarial parasite, renal and liver function tests, serum electrolytes, chest X-ray and ultrasonography of abdomen.

Results

A study of 50 patients of malaria positive cases shows following results. Sex vice distribution observed in present study was as per **Table – 1**. Different species of malarial parasite in present study was as per **Table – 2**. Different species in various studies [1, 2] was as per **Table – 3**. Gender vice distribution in various studies [2, 3] was as per **Table – 4**. Clinical manifestations in various studies [2] were as per **Table – 5**. Thrombocytopenia in various studies [4, 5] was as per **Table – 6**. Case fatality in P.vivax in different study [6] was as per **Table – 7**. Case fatality in P. Falciparum in different study [6] was as per **Table – 8**.

Table - 1: Sex vice distribution observed in present study.

Sex	No. of Patient	%
Male	37	74
Female	13	26
Total	50	100

Table - 2: Different species of malarial parasite in present study.

Malarial species	No of patients	%
P. vivax	41	82
P. Falciparum	09	18
Total	50	100

Discussion

A total of 50 patients were divided into 2 groups, Group A having 41 patients of P. vivax and Group B, having 9 patients with P.falciparum malaria. There were 37 (74%) males and 13 (26%) females using binomial test, it was found that there were significantly greater number of males than females. There were 3 (6%) patients required ventilatory support, out of which 2 patients had P. falciparum and 1 patient had P.vivax malaria. There was only 1 (2%) patient who developed multi organ dysfunction syndrome. Malaria remains a devastating global health problem. The first symptom of malaria is common to all different species, is non-specific and mimics flu like syndrome. Although fever

represents the cardinal feature, clinical findings in malaria are extremely diverse and may range in severity from mild headache to serious complication leading to death particular in P.falciparum malaria but nowadays even P.vivax infection is no longer innocent and it can also lead to death. As the progression to these complications can be rapid, any malaria patient must be assessed and treated rapidly and frequent observations are needed to look for systemic complication [7]. The new WHO guidelines already point to hyperbilirubinemia (total bilirubin >3 mg/dl) as weak marker of severity, unless it is followed by any other vital organ dysfunction. Major predictor mortality among these predefined WHO severity criteria was pulmonary edema, ARDS with 100% mortality, whereas patients with severe anemia, circulatory collapse, and repeated generalized convulsion had 100% survival rate [8]. According to Shubhanker Mitra, Abhilash KPP, studies from South India to compare the severity of malaria caused by P.vivax, P.falciparum and dual infection suggests emerging severity in patients with P.vivax infection. Our study also showed the diverse clinical presentation of P.vivax malaria ranging from fever to cerebral malaria, ARDS, and pulmonary edema and also emphasizes the importance of severity of P.vivax malaria [9]. Anstey NM, et al. suggested that P.vivax patients are more likely to suffer from respiratory distress syndrome as they have more severe alveolar capillary dysfunction. Sequestration of P.vivax infected erythrocyte in the pulmonary micro vasculature and greater inflammatory response to given parasitic burden in P.vivax are probably responsible for this alveolar capillary dysfunction. Small airways obstruction, gas exchange alteration, increase phagocytic activity, and accumulation of pulmonary monocyte are the other suggested mechanism for respiratory complication [10].

Table - 3: Different species in various studies.

Malaria species	Present study (%)	Sarveppali AK, et al. (2017) [1]	Jelia S, et al. (2016) [2]
P. vivax	82	61	65
P.falciparum	18	39	35
Total	100	100	100

Table - 4: Gender vice distribution in various studies.

Gender	Present study (%)	Nandwani S, et al. (2012) [3]	Jelia S, et al. (2016) [2]
Male	74	55	78
Female	26	45	22
Total	100	100	100

Table - 5: Clinical manifestations in various studies.

Sign and symptoms	Present study (%)	Jelia S, et al. (2016) [2]
Fever	100	100
Body ache	82	28
Yellow urine	30	27
Oliguria	6	10
Breathlessness	6	5
Convulsion/ altered sensorium	4	4
Pallor	10	57
Hepatosplenomegaly	6	19
Icterus	14	28
Petechiae	12	3

Table - 6: Thrombocytopenia in various studies.

Author series	Thrombocytopenia (%)
Rajesh Deshwal (2016) [4]	99
UM Jadhav, et al. (2004) [5]	79.4
Present study	88

Table - 7: Case fatality in P.vivax in different study.

Series of authors	No. of patients	No of patient died	Case fatality rate (%)
DK Kochar, et al. (2010) [6]	103	04	3.9
Present study	41	01	2.43

Table - 8: Case fatality in P. Falciparum in different study.

Series of authors	No. of patients	No of patient died	Case fatality rate (%)
DK Kochar, et al. (2010) [6]	185	06	3.2
Present study	09	00	00

Conclusion

The present study highlights the clinical profile of malaria caused by P.falciparum and P.vivax. The comparison of clinical parameters between these two species of plasmodium showed no significant difference in clinical and laboratory parameters. Overall patients with P.vivax malaria had better outcome compared to patients with P.falciparum malaria, by comparing anemia, thrombocytopenia and leukopenia. Hepatic involvement as well as renal involvement is more seen in patients with both P.falciparum and P.vivax malaria, whereas cerebral malaria was exclusively founded in P.falciparum malaria. When we looked at the clinical profile of patient who died, it was observed that bleeding and hepatic involvement were seen less in patient of P.vivax group. It was also noted that some patients in P.falciparum group had more than complication. There was significant association of various parameters like ARDS, AKI, MODS, cerebral malaria, leukopenia, thrombocytopenia and bleeding with mortality. Generally, many other studies have reported that P. Falciparum is complicated malaria involving multisystem organ failure; however, in our study even P.vivax malaria was associated with fatal complication.

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