TO STUDY DIFFERENT COMPLICATIONS IN PATIENTS WITH MALARIA

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Abstract

Method: Each patient was studied in detail with relevant clinical history and examination with following various investigations like peripheral smear for malarial parasite, complete blood count, renal function test, liver function test, blood sugar level, USG abdomen, chest x-ray, urine routine and micro and some special investigations like arterial blood gas analysis, bleeding profile, G6PD activity.

Result: Out of all patients 64% (32) had hemoglobin less than 10 g/dl. Amongst all patients with malaria 18 cases of *P.vivax*, 8 cases of *P.vivax* and 6 patient mixed infection had anemia with Hb<6g/dl. In terms of percentage 57.14% of *P.falciparum* and 60% of *P.vivax* had anemia. Lowest Hemoglobin was 2.1mg/dl noted with patient of mixed infection. It was managed with transfusion of packed cell volume.

Conclusion: Both species are commonly presented with symptoms of intermittent Fever, chills, Bi-frontal headache, vomiting and commonly clinical feature is splenomegaly. Severe complication like anemia, thrombocytopenia jaundice, acute renal failure and sometimes life threatening cerebral malaria are need to address promptly to avoid adverse outcome. All severe complications can be found in both species, though less common in *P.vivax* as compared to *Plasmodium falciparum*.

Keywords: Complication, Malaria, diagnosis & Clinical Presentations

Introduction

Malaria is one of the major public health problems in India. Around 1.5 million confirmed cases are reported annually by National Vector Borne Disease Control Programme. Malaria is curable if effective treatment is started early.¹

The plasmodium parasites are very specific with man as the only intermediate specific vertebrate host and female Anopheles mosquitoes as the vector and definitive host. There has been increasing trend in the past few years for reporting various atypical clinical manifestations and complications of malaria.²

Cerebral malaria is the leading cause of death in malaria accounting for 80% of malaria mortality. Coma persisting for more than 30 minutes after generalised convulsions is a feature of cerebral malaria. It is estimated that between 0.8% to 1.5% of all patients with *P.falciparum* infection progress to cerebral malaria.³

Hypoglycemia in malaria results from a failure of hepatic gluconeogenesis and increase in the consumption of glucose by both host and to a lesser extent the malarial parasites.⁴

Material & Method

This study was done at Department of Medicine, Amaltas Institute of Medical Sciences, Dewas. All patients

admitted with malaria during the study period Feb 2019 to Jan 2020 were taken for the study after considering the inclusion and exclusion criteria. Our study is a clinical, prospective, observational and open study. Each patient was studied in detail with relevant clinical history and examination with following various investigations like peripheral smear for malarial parasite, complete blood count, renal function test, liver function test, blood sugar level, USG abdomen, chest x-ray, urine routine and micro and some special investigations like arterial blood gas analysis, bleeding profile, G6PD activity.

INCLUSION CRITERIA

- All the patients having fever and who had Malaria positive by RDT or by peripheral smear and had any one of the complication of malaria and who are classified as severe malaria as per WHO guidelines⁴⁻⁵
- Age >13 year
- Patient giving consent for the study

EXCLUSION CRITERIA

- Age <13 years
- Who do not give consent

Patient with comorbid conditions such as diabetes, hypertension, Koch's and pre-existing renal, heart, pulmonologic ailments and seizure disorder were excluded from study.

Results

Table 1: SEX DISTRIBUTION OF CASES

SEX	NUMBER OF CASES
MALE	33(66%)
FEMALE	17(34%)

Among the 50 patients studied and admitted, 33 (66%) patients were males and 17(34%) patients were females. Male to female ratio was = 1.94:1. In the study of Kocher et al, the sex ratio was also higher in males. More male cases may be due to outdoor activities of males which make them prone for mosquito bites or may the sample size accounting for the same.

Table 2: Altered Liver function test in complicated malaria

LIVER PROFILE	P.VIVAX (n=30)	P.FALCIPARUM (n=14)	MIXED (n=6)	TOTAL (n=50)
BILIRUBIN(TOTAL>3mg/dl)	12(40%)	7(50%)	4(66.67%)	23(46%)
SGPT(>40mg/dl) & SGOT(>40mg/dl)	12(40%)	7(50%)	4(66.67%)	23(46%)

S.bilirubin of > 3 mg/dl was seen in 23 (46%) patients with complicated malaria, in which 40% patients had complicated P.vivax malaria while in complicated P.falciparum it was raised in 50% patient which shows that complications related to hepatic injury are more in P.falciparum than in P.vivax. The maximum S.bilirubin was 18mg/dl.

Table 3: Altered renal function in patient with complicated Malaria

Acute renal failure	P.VIVAX (n=30)	P.FALCIPARUM (n=14)	MIXED (n=6)	TOTAL (n=50)
S.CREATININE >3mg/dl	12(40%)	8(57.14%)	6(100%)	26(52%)

Renal failure occurred in 52% of cases. Total 26 patients had developed renal manifestation among which 12 were P.vivax, 8 were P.falciparum and 6 patients with mixed infection. Comparison wise P.falciparum had more chance to be complicated as renal alteration as 57.14% patient with P.falciparum had renal involvement whereas, 40% patient with P.vivax had acute renal failure. Maximum s.creatinine noted was 25mg/dl and blood urea was 132 mg/dl. 10 patients had a urine output of <400 ml / day and had metabolic acidosis as well and were managed by hemodialysis.

Table 4: Anemia in patients with complicated malaria

ANEMIA	P.VIVAX (n=30)	P.FALCIPARUM (n=14)	MIXED (n=6)	TOTAL (n=50)
6-10 gm/dl	12 (40%)	4 (28.57%)	2(33.33%)	18(36%)
<6 gm/dl	6 (20%)	4 (28.57%)	4(66.67%)	14(28%)
TOTAL	18 (60%)	8 (57.14%)	6(100%)	32(64%)

Out of all patients 64% (32) had hemoglobin less than 10 g/dl. Amongst all patients with malaria 18 cases of P.vivax, 8 cases of P.vivax and 6 patient mixed infection had anemia with Hb<6g/dl. In terms of percentage 57.14% of P.falciparum and 60% of P.vivax had anemia. Lowest Hemoglobin was 2.1mg/dl noted with patient of mixed infection. It was managed with transfusion of packed cell volume.

Discussion

In respect of hepatic enzymes, SGOT was elevated in 100% of cases who had jaundice. Maximum SGOT level noted was 338 IU/L. In our study the maximum Bilirubin noted was 18 mg/dl, SGOT 338 IU/L and SGPT was 468 IU/L in a patient with mixed malarial infection, it was due to late presentation and resultant high parasitemia and systemic complication like MODS. Naresh et al Haryana has reported mean SGOT & SGPT of 120 & 130 IU/L respectively in their study of 60 cases.⁵

Acute renal failure occurred in 26(52%) of cases (S.Creatinine> 3mg/dl). In our study ARF occurred in 40% of complicated P.Vivax infection, 55.55% of complicated P.Falciparum cases and 66.67% of cases with mixed infection. Maximum S.creatinine noted was 25mg/dl and blood urea was 134 mg/dl.⁶ 10 patients undergone hemodialysis. Other complications noted among ARF patients were jaundice 23.07%, anemia 23.07% and cerebral malaria 19.65.38%. One patient with ARF died who also had other complications like jaundice, Anemia and ARDS.

This is consistent with Prakash⁷ et al from Varanasi reported 93 cases (16.1%) (74 PF and 19 PV) of Malarial ARF out of 577 cases of ARF studied. 73,74 Nityanand et al reported an incidence of 21% ARF in a study of 60 cases (PV 14 and PF 46). 72 Kochar's reported incidence of 6.25% of ARF in PF cases in 2001. 71 Bajiya et al Rajasthan study reported 21% ARF.⁸

Conclusion

Both species are commonly presented with symptoms of intermittent Fever, chills, Bi-frontal headache, vomiting and commonly clinical feature is splenomegaly. Severe complication like anemia, thrombocytopenia jaundice, acute renal failure and sometimes life threatening cerebral malaria are need to address promptly to avoid adverse outcome.

All severe complications can be found in both species, though less common in P.vivax as compared to Plasmodium falciparum.

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