

FALCIPARUM MALARIA: VARIOUS PRESENTATIONS

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ABSTRACT:

Objective: This study was conducted to evaluate the modes of clinical presentations of falciparum malaria.

Design: Descriptive study.

Place and Duration of Study: Medical Unit 5, Civil Hospital Karachi and Ankle Sria Hospital Karachi from August 2003 to December 2005.

Methods: A total of 348 patients admitted with fever were screened with peripheral blood smear for malarial parasite. One hundred and twenty two patients were smear positive. One hundred and eight were positive for plasmodium falciparum, which were included in this study. Eleven patients were positive for plasmodium vivax and three patients had co-infection with plasmodium falciparum and P.vivax which were excluded. Critically ill patients were given injectible Quinine sulphate, rest of them were given either Halofantrine or Artemether orally.

Results: Out of 108 P. falciparum smear positive patients, males were 74 (68.51%) and females were 34 (31.48 %). Fever was present in all patients. Jaundice was observed in 39 (36.11 %), vomiting in 32 (29.62 %), abdominal pain in 23 (21.29 %), altered state of consciousness in 26 (24.07 %), diarrhea in 9 (8.33 %), cough in 8 (7.40 %) and seizures in 2 (1.85 %) patients. Out of 108 patients 22 (20.37%) patients presented with cerebral malaria, 8 (7.40) with picture of respiratory tract infection, 9 (8.33%) patients presented with acute gastroenteritis, 9 (8.33%) with acute abdomen simulating the picture of acute pancreatitis but serum amylase and ultrasound abdomen excluded the diagnosis of acute pancreatitis. Six (5.55%) presented with the picture of acute hepatitis and 4 (3.70%) presented with fulminant hepatic failure with raised serum ammonia levels and hepatocellular jaundice with negative viral markers for hepatitis B, C and E. Three (2.77%) patients presented with a picture of acute renal failure.

Conclusion: Apart from these, many patients were seen with various presentations of acute abdomen, clinical picture of lower respiratory tract infection, acute hepatitis with Fulminant hepatic failure being notorious. Falciparum malaria should be considered as a possibility in all febrile patients even with various presentations for malaria.

KEY WORDS: Falciparum malaria, Various presentation, Acute abdomen, Acute fulminant hepatic failure.

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INTRODUCTION

Malaria is one of the leading causes of the morbidity and mortality worldwide. It results in estimated 300-500 million new cases and 1.5-3 million deaths per year.¹ There is re-emergence of malaria in areas where it had disappeared and is increasing. Yearly approximately 30,000 travelers from the developed world are infected and several hundred die. Infections that remain untreated can continue. There may be persistence of P. falciparum for up to 1.5 years but usually ends in 6-8 months. Infection leads to protective immunity which

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decays after several years if re-infection does not occur. Falciparum malaria is a major community health problem in Pakistan. It has high morbidity and mortality with varied manifestations, various presentations are not unusual, infact more common. The incidence of malaria is on the rise for the last two decades in Pakistan.² The cultural diversity and poverty present particular challenges.³ Malaria is a highly complex disease, can mimic many diseases and there are no absolute diagnostic clinical features.⁴ Clinical presentation of falciparum malaria may vary in individuals depending upon the level of parasitemia and immune status of the patient.

Presentation of malaria with paroxysms of fever, chills and rigors are easy to diagnose and treat. Falciparum malaria is a multisystem disorder, may have unusual presentation with symptoms suggestive of upper and lower respiratory tract infections including acute lung injury,⁵ meningitis,⁶ acute hepatitis including fulminant hepatic failure⁷ and acute gastroenteritis- the most common misdiagnoses⁸ and other presentations. Neuropsychiatric symptoms, Guillain-Barre syndrome⁹ and psychosis¹⁰ have also been reported. With such a diversity of clinical presentations, awareness on the part of treating physician is of crucial importance. In all patients with clinical features suggesting an infectious origin in malaria endemic area, peripheral blood smear may help to reduce the morbidity and mortality of this killer human parasitic disease.

PATIENTS AND METHODS

This study was conducted from August 2003 to October 2005 at Civil Hospital Karachi and Ankle Sria Hospital Karachi. A total of 348 adult patients above 12 years of age, admitted with fever were screened by peripheral blood smear for malarial parasite (MP). The duration of fever ranged from 3–17 days prior to the admission in the hospital. M.P smear positive for *P. falciparum* malaria were included in the study. One hundred twenty two patients were smear positive, 11 (9%) were positive for *P.vivax* and 3 (2.45%) patients had vivax and

falciparum co-infection which were excluded from the study, while 108 (88.52%) positive for *P. falciparum*, were studied. To rule out possible alternative diagnoses; blood, sputum, urine and stool cultures were done. Liver function test (LFTs), viral marker studies, CSF analysis, X-ray chest, ultrasound abdomen, CT scan brain, serum ammonia level and serum amylase level were done as and when required. Patients with definitive alternative diagnoses like tuberculosis, liver abscess, viral hepatitis etc were excluded from the study. SPSS computer software was used for data analysis.

RESULTS

Out of 108 patients with falciparum malaria, 74 (68.51%) were males and 34 (31.48%) were females. Forty eight (44.44%) patients belonged to Balochistan, 36 (33.33%) came from interior of Sindh and 24 (22.22%) were from Karachi. All patients were running fever at the time of admission. Thirty nine (36.11%) patients had jaundice while 23 (21.29%) patients presented with abdominal pain. Another prominent feature was loose motions observed in 9 (8.33%) patients. In these patients initial clinical diagnosis was acute gastroenteritis and acute hepatitis. Eight (7.40%) patients had predominantly cough and expectoration with initial diagnosis of lower respiratory tract infection. Two patients had history of seizures. Low hemoglobin (Hb<10 g/dl) was seen in 18 (16.66%) patients while 39 (36.11%) patients had deranged LFTs. Serum creatinine was markedly raised in three (2.77%) patients (Table-I). Clinical examination revealed 29 patients had hepatomegaly, splenomegaly in 16 patients while abdominal tenderness was

Table-I: Laboratory Investigations

<i>Abnormality</i>	<i>Patients (n-108)</i>	<i>%</i>
Plasmodium falciparum seen	108	100
Hb<10 g/dl	18	16.66
Raised urea	22	20
Raised creatinine	3	2.77
Altered LFTs (Hepatocellular 09, Hemolytic 24)	39	36.11
Leukocytosis > 12000/ μ l	14	12.96

evident in 16 patients. Cerebral malaria was diagnosed in 22 (20.37%) patients, 8 (7.40%) patients having falciparum malaria simulated lower respiratory tract infection. Nine (8.33%) patients presented with acute abdomen while 4 (3.70%) presented with fulminant hepatic failure. Forty seven patient presented with constitutional symptoms, twenty two had cerebral malaria, nine had acute abdomen, nine had acute gastroenteritis, eight had respiratory tract infection, six with acute hepatitis, four with fulminant hepatic failure, three presented with renal failure.

DISCUSSION

Falciparum malaria is a multisystem disorder, can mimic many diseases and there are no absolute diagnostic clinical features. Apart from typical presentations, lots of patients were seen with various presentations. Cerebral malaria is the most prominent feature of severe falciparum malaria. It is defined as deep coma in falciparum malaria.¹¹ In practice any patient with altered consciousness should be treated for severe malaria. Bhalli et al has reported 26% cases of cerebral malaria,¹² in our study it accounted for 20.37% of cases. Acute lung injury, even with bilateral diffuse infiltrates on chest radiography is a well known complication of falciparum malaria.⁵ In adults pulmonary edema is most uncommon, hyaline membrane formation is suggestive of proteinaceous fluid leakage. In pulmonary vasculature there is moderate sequestration and leukocyte aggregates are more prominent in pulmonary than brain vasculature.^{13,14} We have observed 7.40% patients having falciparum malaria simulated lower respiratory tract infection while 13% Iqbal et al¹⁵ have reported in a similar study. Abdominal pain may be prominent in acute malaria. Rarely patients may present with acute abdomen, in some areas watery diarrhea is a prominent manifestation.¹¹ Malabsorption seen in acute malaria suggests reduced splanchnic perfusion.¹⁶⁻¹⁸ Sequestration of splanchnic vasculature and visceral vasoconstriction leads to varying gastrointestinal manifestations. In our study 8.33%

patients presented with acute abdomen and 8.33% presented with clinical picture of acute gastroenteritis while Bhalli et al reported 10.8% cases of diarrhea.¹² There is sequestration in hepatic microvasculature and in very severe infections hepatic blood flow is reduced.¹⁹⁻²¹ Hepatitis and malaria is usually misdiagnosed at emergency departments.⁸ Fulminant hepatic failure is very unusual, but jaundice is common in adults with severe malaria. It appears to have hemolytic, hepatocellular patterns.¹¹ In this study 5.55% patients presented with acute hepatitis, biphasic increase in serum bilirubin, and increase in serum transaminase by more than ten times while 3.70% patients presented with fulminant hepatic failure. The presentation of falciparum malaria as fulminant hepatic failure is common in tropical countries.^{22,23} In severe falciparum malaria there is renal cortical vasoconstriction leading to renal hypo perfusion.²⁴ The renal injury results from acute tubular necrosis,²⁵ possibly from sequestration of renal vasculature and filtration of free hemoglobin, myoglobin and other cellular material. Acute renal failure (ARF) is a common complication of malaria, particularly in adults residing in low or unstable malaria transmission areas.¹¹ In our study 2.77% patients presented with ARF. As far as laboratory abnormalities are concerned, the hemoglobin level <10 g/dl was observed in 18 (16.66%) patients, Bhalli et al¹² has reported 10.5% while Hashmi et al reported 24%.²⁶ LFTs were deranged in 39 (36.11%) patients: eleven (28.20%) had hepatocellular and 28 (71.79%) had hemolytic pattern. Likewise 54% had altered LFTs with 5 (9%) hepatocellular and 49 (90%) hemolytic pattern as reported by Iqbal et al.¹⁵ Leucocytosis with TLC >12000/ μ l was observed in 14 (12.96%) patients while Iqbal et al has reported 16%.¹⁵

CONCLUSION

Falciparum malaria is notorious for various presentations which may mimic like upper and lower respiratory tract infections, acute gastroenteritis, acute hepatitis, fulminant hepatic failure and bacterial meningoenpha-

litis etc. The treating physicians practicing in endemic countries like Pakistan should be aware of the various presentations of falciparum malaria and infact this diagnosis should be considered in every febrile person. Early detection of the parasite on thick and thin films may help to reduce the morbidity and mortality associated with falciparum malaria.

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