CLINICAL PRESENTATION AND OUTCOME OF 100 CASES OF FALCIPARUM MALARIA

Iqbal Haider[1], Muhammad Saleem[2], Fazli Subhan[1], Imran Khan[1], Iftikhar Muhammad[1], Aliena Badshah[1]

ABSTRACT

Objective: *To evaluate the clinical presentation and outcome of Falciparum malaria in 100 hospitalized patients.*

Methodology: *This hospital based descriptive study was conducted at Department of Medicine, Khyber Teaching Hospital, Peshawar from January 2011 to November 2011. One hundred patients of either gender, aged more than 12 years, diagnosed to have falciparum malaria on the basis of peripheral blood smear findings were included. Detailed information was recorded regarding presenting symptoms and signs of patients, response of patients to drugs used for Falciparum malaria, and complications of malaria.*

Results: *Main presenting symptoms were fever (100%), headache (85%), chills (76%), nausea/vomiting (73%), altered level of consciousness (28%), fits (7%) and oliguria (5%). The main signs of Falciparum malaria were splenomegaly (75%), hepatomegaly (67%), anemia (60%), herpes labialis (42%) and jaundice (20%). Female patients were 42%, of whom 17% were pregnant. Ninety eight (98%) patients were treated with quinine + doxycycline, out of which seven (7%) patients died. Two (2%) patients were treated with combination of artemether and lumefantrine, both recovered completely. The common complications were anemia (60%), cerebral malaria (28%), hepatitis (20%), pulmonary edema (10%), hypoglycemia (8%), thrombocytopenia (7%), fundal hemorrhages (6%), renal failure (6%) and disseminated intravascular coagulation (5%).*

Conclusion: *Falciparum malaria can present in a diverse spectrum. Fever with chills, headache, vomiting and altered level of consciousness are the common presenting symptoms. Anemia, cerebral malaria, hepatitis and pulmonary edema are the common complications of falciparum malaria. Response to quinine with doxycycline is good and mortality rate is 7%.*

Key Words: *Falciparum Malaria, Quinine, Artemether, Artemisin-Based Combination Therapy, Complications.*

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INTRODUCTION

Malaria is one of the major infectious disease in the world today despite years of efforts first to eradicate and then subsequently to control and reduce its impact on mortality and morbidity[1]. Plasmodium falciparum, the virulent of the four human Plasmodium species, is potentially life threatening, increasing in prevalence and becoming more resistant to currently in-use medicines. According to World Health Organization (W.H.O.) estimates, there are 300-500 million people infected with malaria[2]. Malaria causes 1.5 -2.7 million deaths annually[3]. It impacts greatly on children and pregnant ladies.

Although malaria transmission today is mainly limited to tropical and subtropical areas of the world, industrialized countries in temperate zones are not entirely free of malaria[4,5]. Situation is not different in Pakistan and falciparum malaria is on the rise[6]. During the previous decade, there has been a six fold rise in incidence of falciparum malaria comprising 42% of all malaria cases recorded by National Malaria Control Program[7]. The predicted effect of malaria in terms of numbers of infected individuals will increase dramatically during the next decade as a result of increasing population in areas at high risk for malaria and with malaria occurring in previously transmission free areas[8]. Favorable circumstances for malaria transmission in wider geographical areas could also be due to projected conditions of global warming[9,10]. Furthermore, resistance to commonly used antimalarial drugs has emerged and is rapidly spreading, necessitating the use of more expensive and potentially toxic drugs and in some areas, longer treatment courses[10-12]. Severe malaria has been a major cause of mortality throughout the world and plasmodium falciparum is the main specie for most of these deaths[13].

1 Department of Medicine, Khyber Teaching Hospital, Peshawar, Pakistan

2 Directorate General Health, Khyber Pukhtoonkhwa Peshawar, Pakistan

Address for Correspondence:

Dr. Iqbal Haider

Senior Registrar, Medical D Unit

Khyber Teaching Hospital, Peshawar, Pakistan.

E-mail: driqbalhaider@yahoo.com

Contact # 0313-9696102

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There is a genuine need to recognize malaria as an emerging or re-emerging disease and take steps to deal with the threat of untreatable malaria. Keeping these facts in mind, the present study was conducted to evaluate the clinical presentation and outcome of Falciparum malaria in 100 hospitalized patients admitted in Khyber Teaching Hospital, Peshawar.

METHODOLOGY

This hospital based descriptive study was conducted at Department of Medicine, Khyber Teaching Hospital, Peshawar, Pakistan, from January 2011 to November 2011. Hundred (100) patients of either gender aged more than 12 years, diagnosed to have falciparum malaria on the basis of peripheral blood smear (both thick and thin blood films) findings were included. A written consent was taken from patient or attendant after informing about the study.

Detailed information was recorded regarding presenting symptoms and signs of patients, response of patients to drugs used for treatment of Falciparum malaria, and complications of falciparum malaria in patients.

The information collected also included detailed history including the pattern of fever, general physical and systemic examinations, Complete blood count and biochemical markers such as Renal profile (blood urea, serum Creatinine), Hepatic profile (serum bilirubin, SGPT, Alkaline Phosphatase), venous blood glucose level, serum electrolytes, arterial blood gases and urinalysis. Peripheral blood smear for malarial parasite was performed three times a day for 03 days on those patients who were not confirmed to be smear positive. If they turned out to be smear positive, only then they were included in the study otherwise not. Statistical analysis of the data was performed with SPSS version 17.

RESULTS

Out of 100 diagnosed cases of falciparum malaria, 58% patients were male and 42% were female. The ages of patients ranged from 15 – 88 years with mean age of 53 ± 11.20 years. Thirty eight (38%) patients were in the age group 15-25 years, 26% in the age group 26-35 years, 16% in the age group 36-45 years, 9% in age group 46-55 years, 5% each in the age group 56-65 years and 66-85 years while 1% patients were in the age group >85 years.

Regarding the geographical distribution, 70% patients were from rural areas and 30% from urban areas. Majority (40%) of patients with falciparum malaria presented during July-September. Seasonal variation of malaria is given in Figure 1.

All the patients (100%) presented with fever (Table I). Amongst them, 55% presented with typical paroxysmal attacks of fever while 45% presented with non-paroxysmal atypical fever. The other common symptoms of patients with Falciparum malaria were headache (85%), chills (76%), nausea and vomiting (73%), altered level of consciousness (28%) and fits (7%).

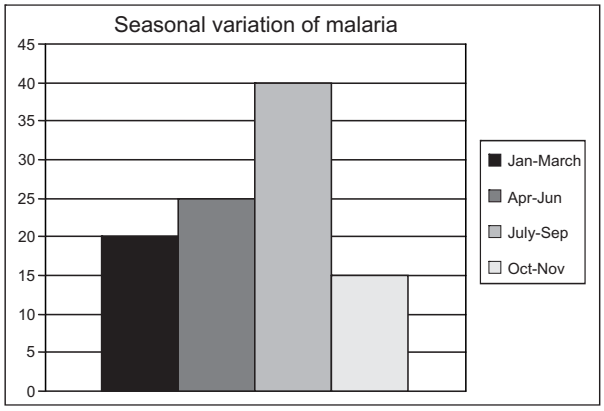

Fig. 1

SYMPTOMS OF FALCIPARUM MALARIA

Symptoms	Frequency (n=100)
Fever	100
Headache	85
Chills	76
Nausea/vomiting	73
Altered level of consciousness	28
Fits	7
Cough	6
Oliguria	5
Diarrhea	5
Abdominal pain	3

Table I

COMPLICATIONS OF FALCIPARUM MALARIA

Complications	Frequency (n=100)	Percentage
Anemia	60	60%
Cerebral Malaria	28	28%
Hepatitis	20	20%
Pulmonary edema	10	10%
Hypoglycemia	8	8%
Thrombocytopenia	7	7%
Fundal hemorrhage	6	6%
Renal failure	5	5 %
Disseminated intravascular coagulation	3	3%
Metabolic Acidosis	2	2%
Pneumonia	2	2%

Table II

The main signs of patients with falciparum malaria were pyrexia (100%), splenomegaly (75%), hepatomegaly (67%), anemia (60%), herpes labialis (42%), jaundice (20%) and rash (5%). Microscopic examination of peripheral blood film revealed that 80% patients had trophozoites, 12% gametocytes and 8% had both trophozoites and gametocytes of plasmodium falciparum. Malarial parasite load was heavy in 15%, moderate in 46% and scanty in 39%.

Seventy eight percent patients with Falciparum malaria had one or more complications. Various complications observed in patients with Falciparum malaria are given in (Table II). The common complications of falciparum malaria included anemia (60%), cerebral malaria (28%), hepatitis (20%) and pulmonary edema (10%).

Ninety eight (98%) patients were treated with quinine + doxycycline, out of which 7% died while 2% patients were treated with artemether + Lumefantrine combination and all of them recovered. The causes of mortality were cerebral malaria, renal failure and disseminated intravascular coagulation (DIC).

Common side effects of drugs observed after starting treatment were nausea/vomiting (31%), dizziness (9%), tinnitus (7%), hypoglycaemia (3%), mild thrombocytopenia (2%), pulmonary oedema (2%) and prolonged QT interval (1%).

DISCUSSION

Falciparum malaria is one of the most common cause of acute febrile illness in Pakistan but clinical diagnosis is often difficult. It is a major community health problem of our country having high mortality and morbidity. Our study concluded that patients present with diverse manifestations. Hematological abnormalities are common finding in falciparum malaria. Thrombocytopenia often accompanies falciparum infection and is usually mild to moderate but very rarely symptomatic. In acute febrile illness, finding of thrombocytopenia along with anemia is an important clue for diagnosis of malaria[14,15].

Our study demonstrated a large number of patients belonged to rural areas of Khyber Pukhtunkhwa (KPK). It may be due to non-availability of primary health care facilities in rural areas as well as due to afghan refugee camps. These camps are located in different rural areas of KPK. There is no proper drainage system in most of the rural areas as well as in refugee camps. Similar high incidence of Falciparum malaria in rural areas of KPK was reported by Mohammad Z[16] and Noorullah J.[17] Most of the Falciparum malaria patients were admitted during the rainy season which provide an ideal condition for pool breeding for mosquitoes. Typical intermittent fever associated with rigors and chills was documented in 55% patients in our study. This typical intermittent fever associated with chills and rigors was not found in all cases as we are living in endemic area and most of the patients have developed some immunity against malaria. The other main symptoms were also comparable with that of Noorullah J[17] and Iqbal S.[11] Fever, splenomegaly, hepatomegaly, anemia, herpes labialis and jaundice were the main signs in our study. Lulu M[18] and Iqbal S[11] reported almost the same comparable results.

Overall complication rate was very high as our hospital is one of the major referral hospitals of the province and majority of cases are serious cases referred from other hospitals. The main complications of falciparum malaria in our study were anemia (60%), cerebral malaria (28%), jaundice (20%), pulmonary edema (10%) and hypoglycemia (8%). These findings were not much different from those reported in national and international studies[18-20]. Mohammad Z[16] reported cerebral malaria as complication of Falciparum malaria in 26.25% of the cases. Our study findings are also comparable with those of Zaheerudin[21]. Tariq M et al[22] reported Thrombocytopenia, cerebral malaria and anemia as common complications of falciparum malaria. Mashoor AS[23] reported cerebral malaria as a complication in 70% of the cases; this is probably because he had studied only complicated cases of malaria.

There is a high prevalence of in vivo resistance of plasmodium falciparum to chloroquine in Pakistan[24,25]. Local studies have documented quinine and artemether as effective treatment of falciparum malaria[22,26,27]. SEAQUAMAT group recommended Artesunate to be the treatment of choice for severe falciparum malaria in adults[28]. For treating plasmodium falciparum in Pakistan, WHO is recommending Artesunate+Sulfadoxine-pyrimethamine combination as the first line therapy and quinine for the treatment failure cases[29]. We preferred to use quinine in 98% of cases with falciparum malaria because majority of our cases were referred cases and were partially treated with the artemisin based combination therapy at referring hospitals. In addition, resistance of plasmodium falciparum to Sulfadoxine-pyrimethamine monotherapy (part of the WHO recommended combination therapy) has been reported in our area[30]. The response of plasmodium falciparum to quinine was good as 92.8% (n=91/98) of patients treated with quinine had survived and only seven patients died of lethal complications of plasmodium falciparum.

Overall mortality rate in our study was 7%. Mortality risk due to mild, uncomplicated malaria is low (<1%)[31]. However in severe and complicated cases, fatality rates of 9.7% have been reported in African children <15 years of age[32]. SEAQUAMAT (South East Asian Quinine Artesunate Malaria Trial) group study conducted in Bangladesh, India, Indonesia, and Myanmar reported mortality rate of 15% and 22% in patients treated with Artesunate and quinine respectively[28]. Age is an independent risk factor for mortality associated with severe malaria and mortality increasing from 6.1% in patients aged <10 years to 36.5% in patients aged >50 years[33].

Important predictors of fatal outcome in severe falciparum malaria are metabolic acidosis, cerebral involvement (loss of consciousness or fits), renal impairment, and co-existent chronic illness[32].

CONCLUSION

Malaria is a diverse disease and can present with broad spectrum of manifestations ranging from typical presentation of fever, rigors to atypical presentations like changing behavior, vomiting, diarrhea, fits, jaundice, renal failure etc. Complication rate is very high and anemia, cerebral malaria, hepatitis and pulmonary edema are the common complications of falciparum malaria. Response to quinine with doxycycline is good and mortality rate is 7%. However a large scale randomized controlled trial is needed to compare Quinine with Artesunate + Sulfadoxine-pyrimethamine combination for the treatment of uncomplicated and complicated falciparum malaria in Pakistan.

In endemic area, every physician must have a low threshold for Plasmodium falciparum infection and its complications. Rapid diagnosis and early treatment with appropriate antimalarial medication can reduce the incidence of malaria and prevent mortality of Falciparum malaria.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

IH: Conception and design, Analysis and interpretation of data, Drafting the manuscript

MS: Critical revision, Final Approval of the manuscript

FS: Drafting the manuscript,

IK, IM, AB: Data collection

CONFLICT OF INTEREST

Authors declare no conflict of interest

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NONE DECLARED

KMUJ web address: www.kmuj.kmu.edu.pk

Email address: kmuj@kmu.edu.pk