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HEMATOLOGICAL AND HEPATORENAL PROFILE IN MALARIA

[1*] Dr. Mona Humaira, [2]Dr. Shakir Hussain Keerio, [3]Dr Abdul Rahim Memon
[3]Dr. Ali Raza Shaikh, [4] Dr. Hamid Nawaz Ali Memon and [1]Dr. Imran Karim
[1]Liaquat University of Medical and Health Sciences – LUMHS Jamshoro
[2]Department of Gastroenterology, Isra University Hospital Hyderabad, Sindh, Pakistan
[3]Liaquat University Hospital Hyderabad / Jamshoro
[4]Zulekha Hospital, Dubai United Arab Emirates

Abstract:
Objective: *To determine the hematological and hepatorenal profile in malaria.*
Patients and Methods: *The cases of malaria admitted and diagnosed clinically and microscopy proven were explored by detailed history and clinical examination to assess clinical severity and complications in this six months cross sectional study. Patients diagnosed by peripheral smear examination (both thick and thin smear) or ICT and the following investigations for haematological and hepatorenal parameters were done which includes complete blood picture, erythrocyte sedimentation rate estimation and peripheral smear, renal and liver function, blood urea, serum creatinine and input/output chart additional investigations were ultra sound abdomen, lumbar puncture for cerebrospinal fluid analysis and random blood sugar. The frequency / percentages (%) and means ±SD computed for study variables.*
Results: *During six months study period total fifty patients of malaria were explored for hematological and hepatorenal profile. The frequency for male and female population was 35 (70%) and 15 (30%) with mean ± SD for age of male and female individuals was 33.74±7.85 and 31.97±5.53 respectively. Regarding gender male population was predominant (70%), type of Malaria P. falciparum 10 (20%), P. vivax 35 (70%) and mixed 05 (10%). The hematological parameters identified as anemia 37 (74%), thrombocytopenia 22 (44%), leucocytosis 14 (28%), leucopenia 15 (30%) while the hepatorenal parameters, hyperbilirubenemia 21 (42%), raised AST 17 (34%), raised ALT 20 (40%), renal failure 04 (8.0%).*
Conclusion: *Hepatic, haematological and renal impairment is a poor prognostic marker and has adverse outcome in patients with malaria.*
Keywords: *Hepatic, Haematological impairment, Renal impairment and Malaria*

Corresponding author:
Dr. Mona Humaira,
Liaquat University of Medical and Health Sciences – LUMHS, Jamshoro

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INTRODUCTION:

Malaria is a protozoan disease transmitted by the bite of infected Anopheles mosquitoes and most important of the parasitic diseases of humans. Malaria has now been eliminated from developed nations but persist in developing countries [1]. Added to this resurgence are the increasing problems of drug resistance of the parasite and insecticide resistance of the vectors [2]. Although there are promising new control and research initiatives, malaria remains today, as it has been for centuries, a heavy burden on tropical communities, a threat to nonendemic countries, and a danger to travelers [3]. There are two types of parasites of human malaria, Plasmodium vivax, P. falciparum, which are commonly reported from Pakistan. Inside the human host, the parasite undergoes a series of changes as part of its complex life cycle [4]. Malaria has been a major public health problem in Pakistan and causes changes in most organs ranging from mild to very severe sometimes fatal. The clinical presentation varies from mild to complicate according to species involved, the patients state of immunity, intensity of infection and presence of concomitant condition [5]. Haematological, hepatic and renal are some of the common systems involved in complicated malaria [6]. The province Sindh is an endemic area to malaria and due to escalating malaria cases in our locality, it is ideal for a study to be conducted to assess the hepatorenal and haematological profile and hence the degree of complication that can from these deranged parameters.

PATIENTS AND METHODS:

The cases of malaria admitted and diagnosed clinically and microscopy proven were explored by detailed history and clinical examination to assess clinical severity and complications in this six months cross sectional study. Patients diagnosed by peripheral smear examination (both thick and thin smear) or ICT and the following investigations for haematological and hepatorenal parameters were done which includes complete blood picture, erythrocyte sedimentation rate estimation and peripheral smear, renal and liver function, blood urea, serum creatinine and input/output chart additional investigations were ultra sound abdomen, lumbar puncture for cerebrospinal fluid analysis and random blood sugar. The exclusion criteria were excluded patients with abnormal liver function tests due to hepatotoxic drug use, known cases of cirrhosis of liver, patients with bleeding diathesis. Once the patient was diagnosed to malaria, antimalarial drugs were given accordingly and other supportive measures were given according to patient's condition. The data was collected on proforma and analyzed in SPSS to manipulate the frequency, percentages and mean ± SD for categorical and numerical variables.

RESULTS:

During six months study period total fifty patients of malaria were explored for hematological and hepatorenal profile. The frequency for male and female population was 35 (70%) and 15 (30%) with mean ± SD for age of male and female individuals was 33.74±7.85 and 31.97±5.53 respectively. The demographical and clinical profile of study population is presented in Table 1.

TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF STUDY POPULATION

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
20-29	10	20
30-39	09	18
40-49	08	16
50+	08	16
GENDER		
Male	35	70
Female	15	30
Type of Malaria		
P. Falciparum	10	20
P. Vivax	35	70
Mixed	05	10
Clinical Signs		
Pallor	40	80
Icterus	21	42
Spleenomegaly	17	34
Hepatomegaly	19	38
CNS involvement	08	16
Hematological parameters		
Anemia	37	74
Thrombocytopenia	22	44
leucocytosis	14	28
Leucopenia	15	30
HEPATORENAL PARAMETERS		
Hyperbilirubenemia	21	42
Raised AST	17	34
Raised ALT	20	40
Renal failure	04	8.0

DISCUSSION:

In current series majority of patients (20%) were in 20-29 year age group while in the study conducted by Farogh A et al [7] maximum number of patients were belonging to the age group of 21-30years where according to study of Muddaiah M, et al [8] the maximum numbers of patients were belonging to the age group of 21-30years. In a study conducted by Bashawri LAM, et al the mean age group was 25.43+14.34 years [9]. In present study male population was predominant (70%) while in the study conducted by Bashawri LAM, et al [19] the ratio of male to female patients was 3.15:1 and according to Jadhav UM, et al [10] 915 patients were male and 650 patients were female the ratio being 1.40:1. In study by Muddaiah M, et al [8] 11.5% had pallor,

14.73% had Icterus, splenomegaly was seen in 15.7%, hepatomegaly was seen in 4.2% and CNS involvement in 4.21% patients. In neighboring country India, about 70% of the infections reported are due to P.vivax; 25-30% due to P. Falciparum and 4-8% are due to mixed infections. P. Malariae is responsible for less than 1% of infections [11]. The findings of present study can be comparable with studies of Bashawri LAM, et al [9] where half the patients had normocytic normochromic blood picture. This could be due to high prevalence of iron deficiency anaemia in our country. Bashawri LAM, et al [9] et al in their study had 17.7% of microcytic hyochromic malaria cases and dimorphic anaemia was seen in 5.76% of study population. The incidence of thrombocytopenia is similar to study of Murthy GL, et al [12] who had an incidence of 41%. Thrombocytopenia is seen with both species, presence of thrombocytopenia is not a distinguishing feature between vivax and falciparum malaria. Jaundice was seen in 42% of study population. Incidence of jaundice is contrast to study by Kochar D et al [13] who had 12%. Hence hepatocellular damage by malaria parasite may be the proposed cause for deranged liver parameters. Renal impairment in the form of acute renal failure was noted in 8% patient while in the study of Kochar D, et al [13] the incidence of renal failure was 2%. Mortality was observed in 2% of patients and death was due to multi organ dysfunction in response to deranged hepatic, haematological and renal parameters.

CONCLUSION:

Hepatic, haematological and renal impairment is a poor prognostic factor and has adverse outcome in individuals with malaria. Thrombocytopenia and hepatic dysfunction have correlation with mortality. Thus the liver dysfunction as a part of multi organ failure especially along with renal failure has worst outcome.

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