Original Article

Experience of Malaria at Tertiary Care Hospitals Sukkur

1. Bahawaluddin Jamro 2. Aftab Ahmed Soomro 3. Shankar Lal 4. Saifullah Jamro

1. Asstt. Prof. of Paediatrics, GMMMC 2. Asstt. Prof. of Hematology, GMMMC 3. Sen. Registrar of Paediatrics CMC 4. Prof. of Paediatrics CMC, Shaheed Mohtrama Benazir Bhutto Medical University Sukkur.

ABSTRACT

Objective: To determine Plasmodium species, clinical features, and hematological changes in Malaria.

Study Design: Prospective Descriptive Study.

Place and Duration of Study: This study was carried out at the Paediatric Departments of Shaheed Mohtrama Benazir Bhutto Medical University at Ghulam Muhammad Mahar Medical college Hospital Sukkur and Chandka Medical Collage Larkana, from July 2007 to July 2011.

Patients and Methods:, This is prospective descriptive study, including 250 patients with fever and malaria confirmed on microscopy and immunochromatography, at both departments were included. After consent a separate pro- forma was filled for each patient to record demography and data about clinical presentation and laboratory investigations.

Results: Out of 250 malaria cases, the classical clinical presentation was found in 198 (79.2%) of patients while 52 (20.8%) had other symptoms. Males were in majority 164 (65.6%) and age range 1 year to 12 years. Splenomegaly was found in 135 (54%) and hepatomegaly in 86 (34.4%) of patients. Microscopy results of malaria patients revealed P. Falciparum in 97 (38.8%), P. Vivax 91 (36.4%) and 62 (24.8%) mixed infection of P. Falciparum and P. Vivax. Anemia was found in most of patients 84% (Hb < 10g/dl). Thrombocytopenia (platelets < 150,000/cmm) was found in 50 (20%) of patients.

Conclusion: The classical presentation of Malaria was seen in majority of cases but one should be careful about atypical or very serious complicated clinical presentation of malaria, and early diagnosis of P. falciparum or mixed infection is very essential to save the life of young children.

Key Words: Plasmodium species, anemia, hepatosplenomegaly, thrombocytopenia.

INTRODUCTION

Malaria is one of the global public health problems and imposes a major burden on health in under developed countries of world. Each year, malaria results in approximately 300-500 million clinical cases and as many as one million deaths[1].Pakistan is among moderately endemic countries for malaria, with the majority of cases caused by Plasmodium vivax, although recently there has been an alarming shift to infection caused by plasmodium Falciparum especially in the southern Punjab, Balochistan and Sindh provinces [2,3,4].There are variation in prevalence of malaria from province to province and area to area. The province Balochistan, which constitute 5% of population of the country but contributes over 30% of the reported malaria case, while the Punjab province with 52% of population reports less than 10% of malaria cases and from Sindh about 30% cases of malaria with 25% of national population. [5]

In Pakistan, there are 1.6 million malaria cases and 50,000 deaths each year[6] Malaria also considerably affects the health of children especially malnourished, leaving sequelae, increasing susceptibility to other infections and hampering their development. Pregnant women are also vulnerable to malaria, being an important cause of stillbirth, infant mortality and low birth weight. Untreated or treated too late plasmodium Falciparum malaria specially caused by drug resistant strains may lead to dangerous complications such as cerebral malaria and severe anemic cardiac failure, renal failure, black water fever, thrombocytopenia, DIC, pulmonary edema and death .Mortality is very high (10-30%) in complicated P. falciparum infection [1]

The emergence of drug resistance in plasmodium falciparum has significantly undermined malaria control programs in countries like us were malaria is endemic [7] and poor population, lack of facilities to investigate early each patient for the plasmodium malaria. Hematologic changes are the most common complications encountered in malaria and play a major role in fatality[7]. We looked on the clinical features of Plasmodium species and hematological changes in patients with malaria in our rural tertiary care setting in Larkana and Sukkur Sindh.

PATIENTS AND METHODS

This is a prospective descriptive study including 250 patients with fever and malaria infection confirmed on microscopy and immunochromatography at Paediatric departments of Shaheed Mohtrama Benazir Bhutto Medical University Sukkur and Larkana, from July 2010 to July 2011.

Inclusion criteria: All patients having fever and malaria infection, and age ranging from 1 year to 12 year of either sex.

Exclusion criteria: patients having other infections like pneumonia, enteric fever, pulmonary tuberculosis, meningitis, congenital problems, like heart, renal, bleeding disorders, and thalassemia.

After taking consent a separate pro-forma was filled for each patient to record detailed medical history and physical examination and base line investigation including complete blood count, peripheral smear .The species of Plasmodium was diagnosed on microscopy of 10% Geimsa stained thick and thin blood film, and by immunochromatography (ICT), blood culture, L .F.T, S creatinine and urea, X-ray chest, and echocardiography as needed in some cases.

The data was analyzed using SPSS version 13.

RESULTS

Out of 250 malaria cases males were 164 (65.6%) and 86(34.4%) females and age ranges from 1year to 12 years as shown below in table 1

The majority of patients presented with classic malaria symptoms in the form of high grade fever, rigors, sweats, headache, nausea, vomiting, diarrhea and pallor 198 (79..2%), while 52 (20.8%) cases presented with other symptoms like jaundice, severe pallor, cyanosis, skin bleeding, drowsiness, unconscious, seizures, splenomegaly, hepatomegaly, anemic cardiac failures, edema, respiratory distress and shock.table2. Clinical examination of the study patients showed that splenic enlargement was in 135 (54%) cases and hepatomegaly was seen in 86 (34.4%) patients.

There was significant difference in the occurrence of hepatosplenomegaly in patients with mixed plasmodium infection of malaria and in P. vivax malaria patients. Seizures followed by un-arousable coma for more than six hours was found in 25 (10%) of cases in our series, more in mixed malaria case 16% and 12% in plasmodium falciparum patients as shown in table 2. In patients with falciparum malaria one had developed acute respiratory distress syndrome and shock.

Blood film examination results for malaria species revealed P. Falciparum 97 (38.8%), P. Vivax 91 (36.4%) and 62 (24.8%) both species (mixed infection) were shown in table 3. None of the case with P. Ovale or P .malariae was detected. All patients had active malaria as evidenced by the presence of schizont and ring stages. The complete blood counts shows hemoglobin ranged from 3 gram/dl to 12 gram /dl, mean Hb level (8.39644+ 2.141464) and with significantly low in cases of falciparum malaria (8. 2588+2.2742) g/dl and (7.4983+ 2.0226) g/dl mixed malaria cases as shown in table 4. Anemia (Hb <10g/dl) was present in most of cases 210 (84%) of patients. Thirty five (14%) patients had severe anemia and required blood transfusion in ward. Anemic cardiac failure was found in 10 (4%) patients. Packed cell volume was low in cases with falciparum and mixed malaria patients. Total white blood cell counts mean was (7351.851+5697.637), there was no significant difference in the different species. Normal platelets were found (>150,000/cmm) in majority of patients 200 (80%), the mean value of platelets was (212873.2+ 112735.6) and thrombocytopenia was found in 50 (20%) of patients. In falciparum malaria, 25 (25.5%) patients had thrombocytopenia, vivax malaria 5 (5.5%) of patients and in mixed malaria 20 (32.2%) patients had thrombocytopenia, but 10 out of 50 thrombocytopenic patients had skin bleeding manifestation.

Table No.1: Age group of 250 patients

Age in years	No; of patients	Percentage
1-4 years	85	34.0%
5-8 years	73	29.2%
9-12 years	92	36.8%

Table No.2: shows clinical presentation of Plasmodium species.

	Falciparum malaria no 97 (38.8%)	Vivax malaria no 91 (36.4%)	Mixed malaria no 62 (24.8%)	Total no 250 (100%)
Symptoms				
Classic	70(72.2%)	85 (93.4%)	43 (69%)	198(79.2%)
Other	27 (27.8%)	6(6.6%)	19(31%)	52(20.8%)
Spleno-megaly	50(51%)	45(50%)	40(64.5%)	135(54%)
Hepato-megaly	30(30.6%)	25 (27.7%)	31(50%)	86(34.4%)
Uncons-cious/CM	12(12.3%)	3(3.3%)	10(16.0%)	25(10.0%)

Table No. 3: Shows species of plasmodium

Species of plasmodium	Number of patients	Percentage
Falciparum	97	38.8%
Vivax	91	36.4%
Mixed falciparum + vivax)	62	24.8%

DISCUSSION

The clinical symptoms of malaria were described by Hippocrates (500BC) more than 2000 years before the parasite described[8]. Malaria has been and still is the cause of much human morbidity and mortality. Forty percent of the world's population lives in endemic areas[7]. The infection rate for the world population is 250 million per year and the mortality rate is 1-2 million per year[9].Most of deaths among these are infants, young children and pregnant women so much so that a child is dying of malaria every 30 seconds[10] Malaria is a world wide problem with transmission occurring in over 100 countries with a combined population of over 1.6 billion people[1].

Table No.4: Shows hematological changes in relation to Plasmodium species

	Falciparum Malaria no;97, Mean± SD	Vivax Malaria No. 91 Mean ± SD	Mixed malaria No. 62, Mean± SD	Total No. 250 Mean± SD
Hb g/dl	8.258±2.274	9.154±1.799	7.498±2.022	8.396±2.141
MCV/fl	70.711±9.859	70.516±10.446	71.696±7.624	70.884±9.559
TWBC	7034.433+2351.95	8143.637±8871.834	6677.419±2365.144	7351.851±5697.637
Platelets/cmm	202103.1±107755.9	252926.4±105245.5	170935.5±113567.5	212873.2±112735.6

The principal areas of transmission are Africa, Asia, and South America. Today, the most important problem in the management of malaria is the drug resistance of Plasmodium falciparum to various antimalarial drugs and occurrence of systemic complications[7] Most of the systemic complications from malaria results from hyperparasitemia. Hematologic changes are the most common complications encountered in malaria and play a major role in the fatality.

Early detection of the atypical features and hematological changes enables the physician to establish an effective and early therapeutic intervention in order to prevent the occurrence of major complications and deaths. In present study of 250 malaria patients, the classical clinical presentation was the most common in 198 (79.2%) while 52 (20.8%) cases had atypical or complicated clinical presentation .These results are comparable to the previously reported by local and international studies [11, 13]. The splenomegaly and hepatomegaly were seen more in cases of P. falciparum and mixed malaria cases than those infected with P .Vivax similar to the local study from Karachi[13] and internationally reported results [14] Cerebral malaria was found in 25 (10%) of our cases more in mixed malaria cases16% and 12% in P. Falciparum patients significantly lower than the locally reported 29%[13] and 25 (41%) [16]. Plasmodium species found in our study 97 (38.8%) P. Falciparum, 91 (36.4%) P. Vivax, and 62 (24.8%) mixed malaria infection with P. Falciparum and P. Vivax, similar to the reported by Taha K et al[14], lower than the reported by Yasinzai MI and Kakarsulemankhal JK [17] but the mixed infection was higher than the locally reported by Jammal MM et [11,13, 15]. Anemia was present in most of patients 84% in our series similar to the Iqbal S et al 70%[18] and severe was found in 14% of our cases while severe anemia was reported in 20 % of cases by Memon S et al[16]. Thrombocytopenia was seen in 50 (20%) of cases in our study, while it was 66%, 67% and 70% reported by Zahur et al, Jamal MM et al and Nadeem M [19,11,20].

CONCLUSION

The classical presentation of malaria was seen in majority of cases but one should be careful about atypical or (anemic cardiac failure, cerebral malaria) very serious complicated clinical presentation of malaria and early diagnosis of P. falciparum or mixed infection is very essential to save the life of young children.

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Address for Corresponding Author:
Dr. Bahawaluddin Jamro
Assistant Professor of Paediarics,
Ghulam Muhammad Mahar Medical College Sukkur.
E mail address: drbahawaljamro@gamil.com
Cell No: 03363861772.
Office No: 0719310774.