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ORIGINAL ARTICLE

STUDY OF CLINICAL AND LABORATORY PROFILE OF MALARIA

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ABSTRACT: INTRODUCTION: Malaria is a major health concern across the world and is endemic in our country. It is imperative for us to know the varied manifestations and lab features both classically described and rare features for early detection of this disease and further treatment. This study was undertaken to study the clinical features, lab features and complications of malaria in a tertiary care centre. **METHODOLOGY**: It is a retrospective study done on 75 cases of confirmed and treated cases of malaria for a period of one year in KIMS hospital, Bangalore. Detailed history examination and lab features of these patients were recorded and analyzed. **RESULTS**: A total of 75 cases of confirmed malaria were treated during study period of which 57[76%] were males Out of 75 cases 46[61%] had vivax malaria infection, 10[13%] had falciparum infection and 19[26%] had mixed infections of falciparum and vivax. In all 3 groups more number of cases was seen in age group of 18 – 40 years. fever was the major presentation (100%) in the patients and Pain abdomen along with fever seen in 15 [20%] patients. Head ache was another predominant complaint in 35[46.6%] On examination Icterus was seen in 11 [14.6%] patients Pallor was seen in 13[17.3%] patients Systolic BP of <90mm hg was seen in 6[8%] patients Thrombocytopenia was seen in 54[72%] patients. Platelet count of less than 50, 000 was seen in 28 [37.3%] patients (17, 4, 7) respectively in vivax, falciparum and mixed infections. SGOT (>2ULN) was seen in 9[12%] patients Out of these 6[8%] patients had severe malaria as defined by WHO category of severe malaria. **CONCLUSIONS:** Being more vigilant and well versed with the varied presentations/lab features of malaria and anticipating complications early, effective treatment can be instituted thus reducing the morbidity and mortality of this endemic disease.

KEYWORDS: Malaria, Vivax, Falciparum, Thrombocytopenias.

INTRODUCTION: Malaria is a major health concern across the world and is endemic in our country. Malaria is caused by a parasite called Plasmodium, which is transmitted via the bites of infected mosquitoes. In India 2 of the 4 types of major parasites are commonly seen which are plasmodium vivax and plasmodium falciparum. In the human body, the parasites multiply in the liver, and then infect red blood cells. Common Symptoms of malaria include fever, headache, and vomiting, and usually appear between 10 and 15 days after the mosquito bite.

If not detected and treated, malaria can quickly become life-threatening. Underlining the importance of vector borne diseases like these, WHO has declared the 2014 campaign of world health day to focus on vector-borne diseases[1]. Many cases of malaria present with varied symptomatology and lab features which may not follow the classical descriptions. Thus this hospital based study was undertaken to study the clinical features, lab features and complications of this disease in our hospital.

MATERIALS &METHODS: This study was done in KIMS hospital and research center, Bangalore.

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Design: it was a hospital based descriptive study done retrospectively on confirmed cases of malaria admitted in hospital from February 2013 to February 2014.

INCLUSION CRITERIA: All confirmed cases of malaria (tested positive by peripheral smear QBC), which were treated in the hospital were included, age group 18 and above were included.

EXCLUSION CRITERIA: fevers mimicking clinical features of malaria and empirically treated for malaria, and cases with negative peripheral smear findings were excluded from this study.

RESULTS: A total of 75 cases of confirmed malaria were treated during study period of which 57 [76%] were males 18 [24%] were females.

Out of 75 cases 46[61%] had vivax malaria infection, 10 [13%] had falciparum infection and 19 [26%] had mixed infections of falciparum and vivax. In all 3 groups more number of cases was seen in age group of 18 – 40 years. Symptom analysis showed fever was the major presentation (100%) in the patients and Pain abdomen along with fever seen in 15 [20%] patients. Head ache was another predominant complaint in 35[46.6%] patients (22, 4&9) respectively in vivax, falciparum and mixed infections.

One patient of falciparum malaria had seizures as presenting complaint with fever.

On examination Icterus was seen in 11[14.6%] patients (6 in vivax, 3 in falciparum and 2 in mixed infection respectively) Pallor was seen in 13 [17.3%]patients (8 in vivax, 2 in falciparum and 3 in mixed infection respectively) One falciparum infected patient had hemolysis and severe anemia, Systolic BP of <90mm hg was seen in 6 [8%] patients (3 in vivax, 2 in falciparum and 1 in mixed infection respectively) Hepatosplenomegaly in 4 [5.3%] patients (2, 1, 1) vivax, falciparum and mixed infections respectively. Splenomegaly in10 [13.3%] patients (4, 1, 5) vivax, falciparum and mixed infection respectively.

Thrombocytopenia was seen in 54 [72%] patients. Platelet count of less than 50, 000 was seen in 28 [37.3%] patients (17, 4, 7) respectively in vivax, falciparum and mixed infections.

One patient with falciparium infection had hematuria and mucosal bleeding.

Altered liver function in the form of increase in total bilirubin was seen in 19[25.3%] patients.

Though Clinical jaundice was seen only in 11 patients, High Total Bilirubin was seen in 19 patients. SGOT (>2ULN) was seen in 9[12%] patients (4, 2, 3) respectively in vivax, falciparum and mixed infections.

SGPT (>2ULN) was seen in 10[13.3%](4, 1, 5) patients. Altered renal function in form of increase in serum creatinine was seen in 5[6.6%] patients (3, 1, 2) respectively in vivax, falciparum and mixed infections.

Out of these 6[8%] patients had severe malaria as defined by WHO category of severe malaria. One patient had features of cerebral malaria. 3 patients had clinical jaundice with other vital organ dysfunction.one patient had severe thrombocytopenia with severe anemia and hemolysis with other vital organ dysfunction. In the patients with anemia, Peripheral smear examination showed majority to have Normocytic Normochromic blood picture with thrombocytopenia and three patients had Microcytic Hypochromic Anemia.

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Total: 75 Patients:

Males	57[76%]
Females	18[24%]

TABLE 1: Gender Distribution

Age Groups [Y]	No. of Subjects With Vivax Infection [%]	No. of Subjects With Falciparum [%]	No. of Subjects With Mixed Infections [%]	TOTAL NO [%]
18-40	32	7	15	**56**
40-60	12	2	4	**18**
Above 60	2	1	-	**3**
Total	**46[61.3%]**	**10[13.3%]**	**19[25.4%]**	**75[100%]**

Table 2: Age Distribution

Symptoms	No. of Subjects With Vivax Infection[%]	No. of Subjects With Falciparum[%]	No. of Subjects With Mixed Infections[%]	TOTAL NO[%]
Fever	46[61.3%]	10[13.3%]	19[25.4%]	**75[100%]**
Headache	22[29.3%]	4[5.3%]	9[12%]	**35[46.6%]**
Pain Abdomen	9[12%]	3[4%]	3[4%]	**15 [20%]**
Loose Stools	4[5.3%]	2[2.6%]	2[2.6%]	**8[10.6%]**
Seizures	0	1[1.3%]	0	**1[1.3%]**
Cough	2[2.6%]	0	0	**2[2.6%]**
Vomiting	11[14.6%]	1[1.3%]	6[8%]	**18[24%]**

Table 3: Symptomatology

Signs	No. of Subjects With Vivax Infection [%]	No. of Subjects With Falciparum [%]	No. of Subjects With Mixed Infections [%]	TOTAL NO[%]
Rhonchi/Crackles	0	1[1.3%]	0	**1[1.3%]**
Hepatomegaly	3[4%]	0	0	**3[4%]**
Hepatosplenomegaly	2[2.6%]	1[1.3%]	1[1.3%]	**4[5.3%]**
Splenomegaly	4[5.3%]	1[1.3%]	5[6.6%]	**10[13.3%]**
Pallor	8[10.6%]	2[2.6%]	3[4%]	**13[17.3%]**
Jaundice	6[8%]	3[4%]	2[2.6%]	**11[14.6%]**
Systolic Bp [<90 mmhg]	3[4%]	2[2.6%]	1[1.3%]	**6[8%]**

Table 4: Signs

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Investigations	No. of Subjects with Vivax Infection [%]	No. of Subjects with Falciparum [%]	No. of Subjects with Mixed Infections [%]	TOTAL NO [%]
Anemia [Hb: 7-11] Hb: [<7]	8[10.6%] 0	1[1.3%] 1[1.3%]	3[4%] 0	13[17.3%]
Platelet Count 1-1.5 L 0.5-1.0 L <0.5l	 2[2.6%] 17[22.6%] 17[22.6%]	 0 1 4[5.3%]	 2[2.6%] 4[5.3%] 7[9.3%]	54[72%]
SGOT>2ULN	4[5.3%]	2[2.6%]	3[4%]	9[12%]
SGPT>2ULN	4[5.3%]	1[1.3%]	5[6.6%]	11[14.6%]
High Total Bilirubin	16	2	1[1.3%]	19[25.4%]
S. Creat >2.0	3	1[1.3%]	1[1.3%]	5[8%]

TABLE 5: Laboratory Parameters

DISCUSSION: This present study shows a predominant male prediliction [76%] to females comparable to other studies of Preetam N Wasnik et al.[2] Among them vivax infestation was the most common, seen in 61.3% % of subjects, falciparum in 13.3 % of subjects and mixed infections in 25.4 % of subjects as in other studies where Vivax was again the most common followed by mixed species infection and falciparum.

Majority of the patients were between the age group of 21-40 years with the high incidence between the age group of 21-30 years similar to studies by muddaiah et al.[3] In the present study fever was seen in all patients, head ache was the next predominant complaint seen in [46.6%] of subjects. One patient with falciparum infection had features of cerebral malaria with seizure headache and fever. The clinical features are comparable to other studies of Preetam N Wasnik et al [2]and Chowta M N.[4]

Other different and varied symptomatology included pain abdomen, loose stools and vomiting and myalgia, cough these varied and atypical presentations were seen in other studies also.

A study from Jamshedpur in Jharkhand state of India has described the atypical presentation of falciparum malaria comprising convulsion in 28.55 %, abdominal pain in 5.7 %, hemiplegia in 2.8 %, generalized weakness and palpitation in 5.5 % of cases.[5]

On routine examination pallor was seen in 13 patients [Vivax 8, falciparum 2 and mixed infections 3] Anaemia is an important cause for high morbidity and mortality in malaria. Pathogenesis of anaemia in malaria is multifactorial. In one study from Orissa,[6] 86.7 % had anemia and 10 % had severe anaemia and study by Chowta M N et al demonstrated anaemia in 20 (37.07%) patients. The presence of anemia adds to morbidity of the illness. Thrombocytopenia was a significant finding seen in our study in almost 72% of subjects. Presence of thrombocytopenia in malaria has been found in other studies like jadhav et al,[7] though not a very important prognostic value in malaria it is a very important lab finding clinicians to be aware of as often in cases of fever with thrombocytopenia viral fevers are thought more often than malaria.

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The mechanism of thrombocytopenia in malaria is uncertain. Immune-mediated lysis, sequestration in the spleen and a dyspoietic process in the marrow with diminished platelet production have all been postulated. Abnormalities in platelet structure and function have been described as a consequence of malaria, and in rare instances platelets can be invaded by malarial parasites themselves.

Altered LFT in form of hyper blirubinimia was seen in 19 [25.4%] patients though clinical jaundice was seen only in 11 patient's hyper bilirubinaemia in falciparum malaria results from intravascular haemolysis of parasitized RBCs, hepatic dysfunction, and an element of microangiopathic haemolysis due to DIC.[8]

SGOT elevation [>2ULN] was seen in 9 [12%] patients and SGPT [>2ULN] seen in11 [14.6%]. In a study done by ram prakash saya et al malarial hepatopathy was Seen in 38% of patients [9]Altered RFT in form of elevated serum creatinine was seen in 5patients [8 %]

Out of the six patients of severe malaria [defined according to WHO standard guidelines] 2 were falciparum, 2 in vivax and 2 in mixed infection group several studies have confirmed the presence of these complications as in harris et al.[10]

Though no deaths were reported in our study group, mortality of up to 6.25% or more have been reported in other studies preetham wasnik.[2] This probably can be explained by the fact we had less cases of severe falciparum malaria and complicated malaria. All the patients received the standard of care treatment and responded well.

CONCLUSIONS: This study describes us the various typical and atypical presentation of three common types of infection in malaria along with lab features like anemia, significant thrombocytopenias, hyper bilirubinimia along with presence of severe malaria. Thus by being more alert and knowing the different presentations and lab features of this common disease early diagnosis can be made which in turn would help us for better treatment thus reducing the morbidity and mortality associated with it

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