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Study of Clinical Profile of Plasmodium Vivax Malaria with Hepatic Dysfunction in A Tertiary Care Hospital.

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ABSTRACT

Malaria is the most important parasitic disease in the world related to high morbidity and mortality. Jaundice is one of the common manifestation of severe malaria in adults and its incidence vary from 10-45% in different regions. Presence of jaundice in malaria indicates a more severe illness with higher incidence of complication. Jaundice plus evidence of other vital organ dysfunction vital as one of manifestation of severe malaria based on WHO guideline 2010. Jaundice in severe malaria caused by multi factorial and can result from haemolysis of parasitized and nonparasitized red blood cell, hepatic dysfunction and possibly an element of microangiopathic haemolysis associated with disseminated intravascular coagulation. Awareness of malaria biliosa is important to prevent complication and mortality. The present study was done to evaluate the clinical and biochemical liver profile changes in patients with malaria, to study prevalence of jaundice in Plasmodium vivax and the type of jaundice. Cases satisfying WHO criteria of malaria included in the study population included 100 patients admitted in Krishna institutes of medical sciences. Retrospective cross-sectional descriptive study. maximum number of cases (78%) were in between the age group of 18-50 years with the high incidence (38%) between the age group of 18-30 years and 67% male and 33% were female. fever was the commonest clinical manifesttion present in 100% cases followed by nausea vomiting in 42%, headache in 23%, myalgia in 19%, pain abdomen in 13%, joint pain in 12% cases, cough 8% and Dyspnoea in 4 %. The raised serum bilirubin could be due to both hemolysis and hepatocellular dysfunction. Early diagnosis and treatment will help in reducing further complications like severe anaemia, hepatic encephalopathy, acute renal failure and disseminated intravascular coagulation.

Keywords: Clinical Profile, LFTs, P. Vivax Malaria, Tertiary Care Hospital

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INTRODUCTION

Malaria continues to be one of the important public health problems in India. As per World Health Organization report 2015, South East Asian Region bears the second largest burden of malaria (10%), only being next to African region (88%).Malaria caused 214 million infections and 438000 deaths worldwide, most of them occurred in the Africa region (90%) followed by SEA Region (7%).[1] Among South-east Asia region, India shares two-thirds of the burden (66%) followed by Myanmar (18%) and Indonesia (10%). [2] The malaria situation remains a major problem in certain states and geographical pockets. The majority of malaria cases and deaths in India are being reported from Orissa, Rajasthan, Jharkhand, Chhattisgarh, Madhya Pradesh and the Seven North Eastern states.[3]

Malaria is caused by protozoan parasite of genus plasmodium. Five species of the plasmodium P. Falciparum, P. Vivax, P. Ovale, P. Malariae and P. Knowlesi cause malaria in humans. Infection is initiated when sporozoites from the salivary glands of a female anopheles mosquito are inoculated during a blood meal into the human blood stream.[4] The common clinical manifestation are fever with chills and rigors, headache, vomiting, jaundice and common sign being splenomegaly, pallor, and icterus.[5-7]

Laboratory alterations associated with malaria are well recognized but specific changes may vary with level of malaria endemicity, demographic factors and malaria immunity. Hepatic involvement is one of the cardinal manifestations of severe malaria. [8,9] The present study was done to evaluate the clinical and biochemical liver profile changes in patients with malaria, to study prevalence of jaundice in Plasmodium vivax and the type of jaundice (hemolytic or hepatic) in malaria.

MATERIAL AND METHODS

Source of data

A detailed history and physical examination details were collected from patient records in the hospital medical record department. Laboratory investigations were also obtained from the records.

Method of Collection of Data

Cases satisfying WHO criteria of malaria included in the study population included 100 patients admitted in Krishna institutes of medical sciences. The patient record was analyzed, name, age, sex, duration of symptoms, test done for confirmation, forms of malaria, treatment received from outside, presenting complaints, clinical signs, laboratory investigations, co morbid conditions , treatment given and outcome of the treatment was recorded. Patients population included from urban, rural, peripheral areas.

Design Of The Study

Retrospective cross-sectional descriptive study

Duration of the Study

The study was carried out on patients presenting with Malaria during a 24-month period from 1ST January 2015 to 31st December 2016.

Inclusion criteria

All the cases were tested positive for malaria parasite and admitted at the medicine ward in the age group of 18 year and above were included.

Exclusion Criteria

A) Patients with history of pre-existing liver disease,
B) Patients with malignancy and other chronic disease pertaining to multiple systems,

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C) Diagnosed cases of malaria but later found to have another associated cause of jaundice,
D) Pregnant women,
E) Patients with suspected drug-induced liver injury.

RESULTS

Table 1: Age wise distribution of the study participants

Age Group	Frequency	Percentage
18-30	38	38%
31-40	17	17%
41-50	23	23%
51-60	12	12%
61-70	7	7%
>70	3	3%

Figure 1: Age wise distribution of the study participants

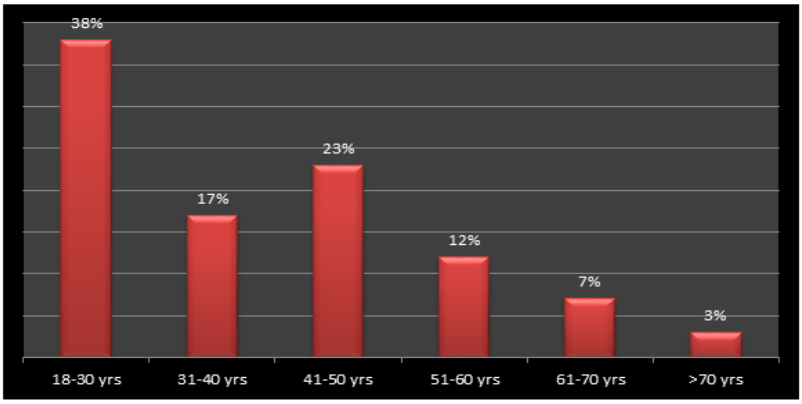

Table 2: Sex wise distribution of the study participants

Sex	Frequency	Percentage
Male	67	67%
Female	33	33%
Total	100	100%

Table 3: Clinical profile of the study participants

Symptoms and signs	Frequency	Percentage
Fever	100	100%
Nausea & Vomiting	42	42%
Headache	23	23%
Cough	8	8%
Dyspnoea	4	4%
Myalgia	19	19%
Joint pain	12	12%
Abdominal pain	13	13%
Pallor	32	32%
Ictrus	21	21%
Patechiae	4	4%
Hepatomegaly	6	6%
splenomegaly	22	22%
hepatosplenomegaly	8	8%

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Figure 2: Clinical profile of the study participants

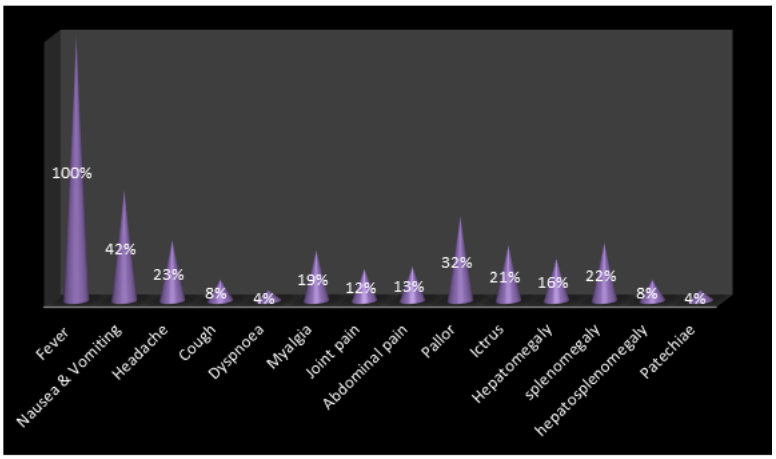

Table 4: Serum billirubin levels among study participants

Serum billirubin	Frequency	Percentage
<1	72	72%
1-5	23	23%
>5	5	5%
total	100	100%

Figure 3: Serum billirubin levels among study participants

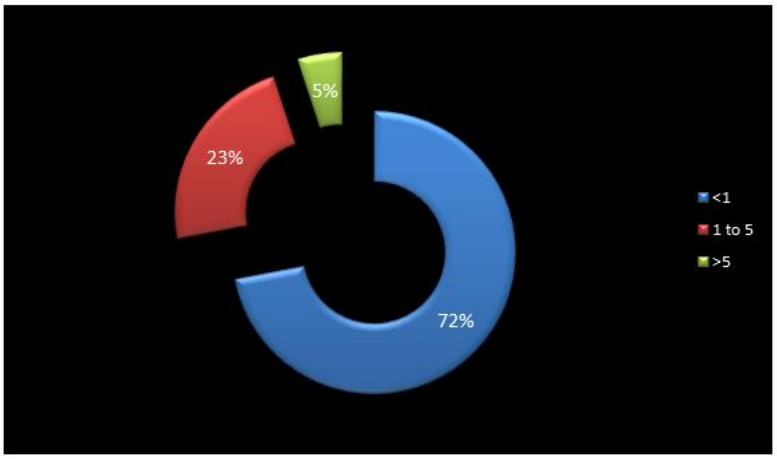

Table 5: Type of Bilirubinaemia

Types of Bilirubinaemia	Frequency	Percentage
Predominantly direct	12	12%
Predominantly indirect	16	16%
Mixed feature	7	7%

Table 6: Serum Transaminases

Serum Transaminases	SGOT	SGPT
<40	65	61
41-100	24	27
>100	11	12

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Table 7: Serum Alkaline Phosphatase

S. Alkaline Phosphatase	Frequency	Percentage
<37	9	9%
37-147	53	53%
>147	28	28%

Table 8: Serum Albumin Level

Serum Albumin	Frequency	Percentage
<1	00	00%
1-2.4	18	18%
2.5-3.4	34	34%
≥3.5	48	48%

Figure 4: Serum Albumin Level

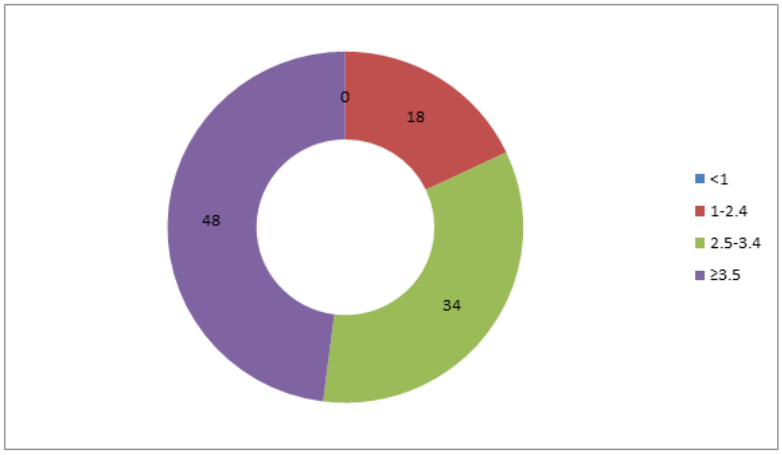

Table 9: Prothrombin Time

Prothrombin Time	Frequency	Percentage
12 – 16 seconds	73	73%
>16 seconds	27	27%

DISCUSSION

In present study, a total of 100 malaria cases were studied, maximum number of cases (78%) were in between the age group of 18-50 years with the high incidence (38%) between the age group of 18-30 years. Similar study was done by Estacio RH et al who reported that most of their patients (30%) were in between 19-35years of age and Sudhirbabu et al reported 30% cases were in the age group of 21-30 years of age and Maddhu et al reported 70% cases were in the age group of 21-30 years of age and Suryawa A et al also reported that maximum number of cases (64%) were in between the age group of 20-40 years with the high incidence (34.71%) between the age group of 20-30 years in their study. In present study and other similar study, there was mostly young and middle aged group patients were affected.[6,7,10,11] This may be due to young and middle aged group are being more active outdoors from dawn to dusk.

A total of 100 patients were hospitalized out of which 67% male and 33% were female. Male to female ratio was 2.03: 1 . Our study shows male preponderance, this is consistent with similar study conducted by Wasniket al[12] and also finding concordance to study conducted by Rajesh Deshwal[13] with male preponderance of 79%, this finding is in consistent to study by Bhakshi al[14] where female outnumbered male .

This could be because of geographical location and also possibility of incidence of malaria more in men than in women due to working pattern i.e. man exposed to mosquitoes bites out door.

In present study fever was the commonest clinical manifestation present in 100% cases followed by nausea vomiting in 42%, headache in 23%, myalgia in 19%, pain abdomen in 13%, joint pain in 12% cases, cough 8% and Dyspnoea in 04 %. Present study's results are nearly similar to study done by Gopinath VP et al reported fever in 97.8% and vomiting in 42.2%, headache in 69%. Murthy GL et al who also reported fever with chills and rigor in 98.10%, later Madhu Muddaiah et al noticed that fever was present in all cases (100%), nausea and vomiting in 37.36%, headache in 33.6%, jaundice in 15.78%, altered level of consciousness in 4.21% cases, and even Sudheer Babu Devineni et al also noted that fever was the most common symptom (100%) followed by vomiting in 22.22%, headache in 25.56%,.[6,7,15,16] So according to above mentioned studies and the present study commonest symptoms were fever, headache and vomiting.

Serum billirubin levels among study participants, 72% of the patients had serum billirubin levels < 1 mg%, 23% of the patients had levels between 1 – 5 mg% and 5% had levels > 5 mg%. Don Oh Myoung, Shin Hyungshik et al conducted a study on clinical features of vivax malaria in South Korea. 89% of the p. vivax malaria patients had serum bilirubin levels < 2mg/dl, 8.9% had levels between 2.1 – 3.0 mg/dl and 2% had levels > 3 mg/dl.[17] Naik Bolar Sadananda conducted a prospective study to look for the incidence of jaundice in plasmodium vivax malaria patients in Moodabidriin South India. Mean serum bilirubin in this study was 4.47 mg%.[18] Gohil Soham, Mody Priyank, Nimavat Khyati conducted a study on a haematological profile of malaria patients in a hospital of Jamnagar district. 69.09% of the participants had serum bilirubin levels < 1.2 mg/dl, 29.09% of the participants had levels between 1.2-5 mg/dl and 1.81% of the participants had levels between 5-10 mg/dl.[19] Limaye Charulata, Londhey Vikram and Nabar ST conducted a study of complications of vivax malaria in comparison with falciparum malaria in Mumbai. 5.32% of the p. vivax malaria patients had serum bilirubin levels > 3 mg%.[20]

Serum SGPT levels in study participants. 61% of the participants had SGPT levels < 40 IU/lit, 27% had levels between 41-100 IU/lit & 12% had levels > 100 IU/lit. Gohil Soham, Mody Priyank, Nimavat Khyati conducted a study on a haematological profile of malaria patients in a hospital of Jamnagar district. < 40 IU/lit levels were present in 56.36% of the participants, levels between 41-100 IU/lit were present in 32.73% of the participants and SGPT levels > 100 IU/lit were present in 10.91% of the participants.[19]

CONCLUSION

Malaria is a potential cause of morbidity and mortality in the tropical countries. Jaundice is one of the common presentations of malaria. The raised serum bilirubin could be due to both hemolysis and hepatocellular dysfunction. Early diagnosis and treatment will help in reducing further complications like severe anaemia, hepatic encephalopathy, acute renal failure and disseminated intravascular coagulation.

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