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Research Paper

Medical Science

KEYWORDS : Endemic, Hepatomegaly, Splenomegaly

Ultrasonography of Liver and Spleen in P. Vivax Malaria

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ABSTRACT

Aims : To evaluate correlation of organomegaly with levels of various biochemical parameters i.e. Hb, SGOT/PT Serum alkaline Phosphatase, Blood Urea, Serum Creatinine, Absolute Plate Count of patients of malaria.

Material & Methods : This study was cross sectional study. All the febrile as well as non febrile patients PV/PF positive status were enrolled for the study. The patients attending both indoor as well as outdoor clinic were enrolled. P. vivax and P. falciparum status were diagnosed by either PBF smear or rapid diagnostic cord test or both.

Results: ultrasinography finding of mild hepatomegaly shows mild increase in bilrubin and liver enzymes while moderate hepatomegaly shows modest incerese in bilrubin. Thrombocytopenia was similarly related to spleenomegaly.

Conclusions: In present study we observed size of liver was proportional to the level of serum bilirubin and liver enzymes (SGOT/SGPT). Size of spleen is directly proportional to level of platelet count.

INTRODUCTION

Malaria is endemic in more than 100 countries, affecting 300-500 million people and is causing 1.0-2.5 million deaths annually. It is endemic in tropical and subtropical countries affecting 40% of world's population living in these areas1. Jaundice is one of the common manifestations of severe malaria in adults and its incidence vary from 10-45% in different regions. Over a decade ago, cerebral malaria was the predominant manifestation of severe malaria, whereas today the combination of hepatic dysfunction and renal failure is observed more commonly1. A study from Vietnam reported that 63% of adult patients of malaria having acute renal failure also had jaundice2. Presence of jaundice in malaria indicates more severe illness with higher incidence of complication and the mortality rate was also higher in this group of patients (40 vs 17%)3.

Malaria is a major health problem in the tropics. Liver dysfunction has been a common finding in malaria patients since the disease was described clinically and histologically4"5. However, opinions differ as to the extent and clinical importance of liver damages in malaria6"7.

AIMS :

1. To study correlation between size of liver and spleen in patients of malaria with biochemical parameters in form of CBC, LFT, RFT.

MATERIAL AND METHODS

This study was conducted in the Department of Medicine and Department of Radiodiagnosis in S.P. Medical College, Bikaner amongst the persons attending the Malaria Research Lab, OPD and Indoor patients.

INCLUSION CRITERIA

1. Both P. vivax and P. falciparum malaria positive patients - Indoor as well as outdoor.

EXCLUSION CRITERIA

1. Patients who had other concomitant illness likely to affect liver and spleen.

METHODOLOGY

This study was cross sectional study with patients of malaria. All the patients were non febrile. PV/PF positive status were enrolled for the study. The patients attending both indoor as well as outdoor clinic were enrolled.

P. vivax and P. falciparum status were diagnosed by either PBF smear or rapid diagnostic cord test or both.

All subjects were examined clinically in detail and biochemical evaluation done CBC, LFT, RFT, USG abdomen were done in all subjects.

All the clinical, laboratory and radiologically finding will be entered and documented in the proforma. Only the critical patients whose abdominal USG is not feasible due to any reason were not be taken in the study.

Abdominal USG was focusing on hepatic and spleen echotexture, size, blood vessels. Material

- PBF - Glass Slides
- Rapid Diagnostic Card Test
- USG

RESULTS

USG finding of mild hepatomegaly shows mild increase in serum bilirubin and liver enzyme (SGOT and SGPT) while USG finding of moderate hepatomegaly shows modest increase in serum bilirubin and liver enzyme's (SGOT and SGPT).

We divided the subjects in to 2 groups according to both liver and spleen i.e. <15 (normal to mild) and > 15 (moderate to severe).

Severity of hepatomegaly is proportional to the serum bilirubin and liver enzymes (SGOT/SGPT). However, significant results were found in serum bilirubin. SGOT and serum alkaline phosphatase.

USG finding of splenomegaly has no consistent relation with mean value of serum bilirubin and liver enzymes.

When we compare group 1 with group 2 according to hepatomegaly, we observed significant changes in serum bilurubin where in group 1 mean+SD were 1.81±2.45 while in group 2 it was 6.93±12.66 ($p < 0.01$), while in SGOT it was 27.36±14.98 in group 1 and in group 2 it was 61.90±25.79 ($p < 0.001$) and in serum alkaline phosphatase it was 79.63+46.67 in group 1 and 123.60+51.64 in group 2 ($p < 0.05$) while all other parameters i.e. Hemoglobin, fasting blood sugar, SGPT, blood urea and.serum creatinine were statistically found insignificant ($p > 0.05$ in all; Table 1).

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Character-istics	Severity of Hepatometaly				t	P
	Normal to Mild (n=80)		Moderate to Severe (n=20)			
	Mean	SD	Mean	SD		
Hb	9.19	2.43	10.46	2.72	0.916	0.341
FBS	96.45	39.63	86.05	34.31	0.077	0.782
SB	1.81	2.45	6.93	12.66	10.322	0.002
SGOT	27.36	14.98	61.90	25.79	12.541	0.001
SGPT	1.45	0.65	2.45	0.76	1.202	0.276
Alk Phos	79.63	46.67	123.60	51.64	5.553	0.020
BU	36.62	26.89	36.05	22.22	0.106	0.745
SC	1.48	1.99	1.36	1.42	0.048	0.827

According to spleenomegaly, we observed significant changes in hemoglobin where the mean+SD in group 1 was 9.48+2.22 and in group 2 it was 9.14+4.65 ($p<0.05$), where in SGPT it was 1.68±0.80 and 1.40±0.52 in group 1 and group 2 respectively ($p<0.05$) and in serum alkaline phosphatase the mean values of group 1 and 2 were 90.16+52.84 and 72.80±16.82 ($p<0.05$). All other parameters were statistically found insignificant ($p>0.05$; Table 2).

Table 2 : Comparison of severity of Splenomegaly in different biochemical parameters

Characteristics	Severity of Splenomegaly				t	P
	Normal to Mild (n=80)		Moderate to Severe (n=20)			
	Mean	SD	Mean	SD		
Hb	9.48	2.22	9.14	4.65	5.460	0.021
FBS	94.94	40.53	89.20	13.42	0.547	0.461
SB	2.94	6.62	1.83	1.90	0.674	0.414
SGOT	35.10	23.09	26.80	12.33	3.425	0.067
SGPT	1.68	0.90	1.40	0.52	4.861	0.030
Alk Phos	90.16	52.84	72.80	16.82	4.688	0.033
BU	37.44	27.08	28.10	7.17	2.912	0.091
SC	1.45	1.89	1.51	1.93	0.146	0.703
TLC	7519.13	4039.68	5750.00	3528.51	0.519	0.473
Platelet Count	112485.40	91824.45	58357.14	23854.07	13.552	<0.001

When we compare splenomegaly with platelet count the mean values were 86112485.40±91824.45 and 1458357.14+23854.07 in group 1 and group 2 respectively. We observed statistically highly significant difference between severity of splenomegaly and platelet count ($p<0.001$; Table 3).

DISCUSSION

In our study we did not found any severe case in relation to hepatomegaly while 19 cases were found from moderate hepatomegaly and 32 were found mild hepatomegaly.

Mean serum bilirubin in moderate cases was 7.26+12.91 while Mean SGOT in moderate cases was found 64.26+24.17 and mean SGPT in moderate cases 71.26+28.29. While in mild cases mean serum bilirubin was 2.84+3.63, mean SGOT was 35.00+20.02 and mean SGPT was 71.26±28.29. So our study is correlated with the study of Kochar et al8 in respect of serum bilirubin, SGOT and SGPT in hepatomegaly. Tangpukdee et al were also found similar observations9.

In present study we observed that severity of hepatomegaly is proportional to the serum bilirubin and liver enzymes (SGOT/ SGPT).

In our study with reference to splenomegaly, we found mean serum bilirubin in mild cases was 1.96, in moderate cases was 2.14 and in severe cases was 1.10 while mean SGOT in mild cases was 28.62, in moderate was 24.57 and in severe cases was 34.27. Mean SGPT mild cases was 34.97, in moderate cases 30.71 and in severe cases it was 40.67.

Similar observations were also found by Hamel et al10 and Zingman et al11.

In our study, USG finding of splenomegaly has no consistent relation with mean value of serum bilirubin and liver enzymes. With mild splenomegaly shows increase with serum bilirubin and moderate splenomegaly show increase with serum bilirubin and liver enzymes and severe splenomegaly has no relation with other findings.

Similar observations were also found.by Hamel et al10 and Zingman et al"11.

In present study, platelet count in P. vivax in malaria shows that thrombocytopenia is directly to the severity of splenomegaly. Mild splenomegaly shows mild to moderate thrombocytopenia, moderate splenomegaly shows moderate thrombocytopenia and severe splenomegaly shows severely decreased platelet count.

Similar observations were also found by Hamel et al10 and Zingman et al"11.

In present we found one case of multiple Sol (Abscess).

CONCLUSION

1. In present study we observed that severity of hepatomegaly is proportional to the serum bilirubin and liver enzymes (SGOT/ SGPT).

In our study with reference to splenomegaly, we found mean serum bilirubin in mild cases was 1.96, in moderate cases was 2.14 and in severe cases was 1.10 while mean SGOT in mild cases was 28.62, in moderate was 24.57 and in severe cases was 34.27. Mean SGPT mild cases was 34.97, in moderate cases 30.71 and in severe cases it was 40.67.

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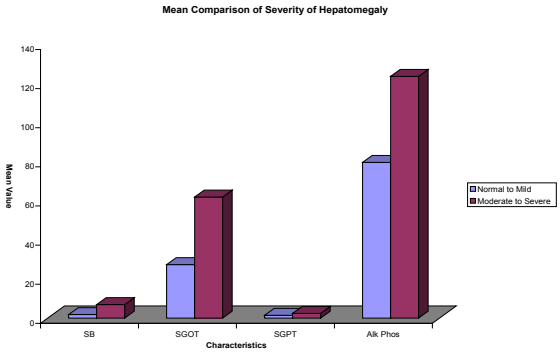
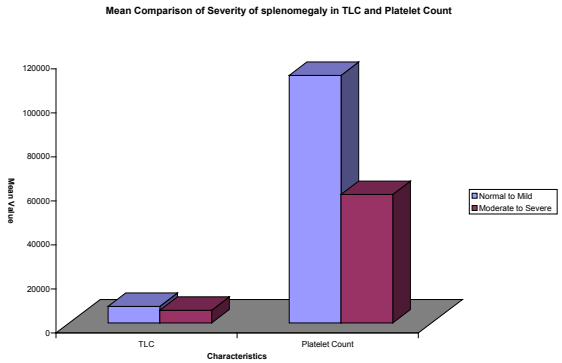
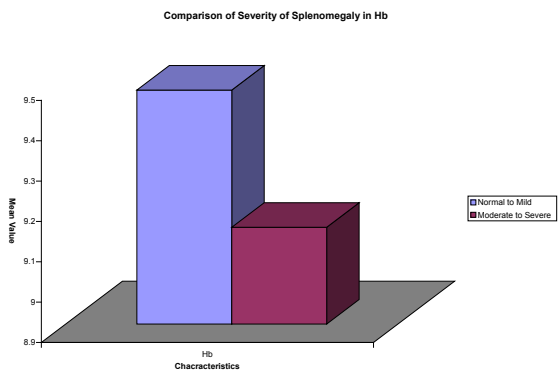
In present study, we found multiple sol (Abscess) in spleen in only one patient.







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