Alteration of Liver Function in Preeclampsia and Eclampsia

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Abstract

Introduction: Abnormal liver function in patients with PET and eclampsia affect both maternal and fetal outcome negatively. This study was done to see change of liver function in comparison to normal pregnancy and normal reference value. **Methods:** Consecutive 47 patients of PET and eclampsia were taken as cases and 35 normal expectant mother were enrolled as controls. ALT, AST, alkaline phosphatase, serum bilirubin, serum creatinine and urine for albumin of patients andnormal pregnant women were tested and compared. **Results:** ALT, AST, S. Bilirubin, Alkaline phoshatase levels were elevated with more proteinuria among patients with PET and eclampsia, but ALT and alkaline phosphatase levels and level of proteinuria were significantly higher. **Conclusions:** Liver function impairment is very common in pre-eclampsia and eclampsia.

Key words: PET; Eclampsia; Liver function.

INTRODUCTION

Preeclampsia (PET) and eclampsia are pregnancy induced hypertensive disease. PET is diagnosed clinically with presence of hypertension, oedema and proteinuria in absence of preexisting hypertension and renal disease. In addition to these convulsion is present in eclampsia[1]. These are pregnancy specific hypertensive syndrome, when severe, can cause substantial maternal and fetal mortality and morbidity[2]. Prevalence of abnormal liver function tests in pregnancy complicated by PET and eclampsia varies from 20 -30 %[3,4].

Pathophysiology of PET and eclampsia is not clearly known. Maternal endothelial dysfunction mediated by excess placenta-derived soluble VEGF receptor 1 is emerging as prominent component in disease pathogenesis[5]. Preclampsia and eclampsia occur during second and third trimester of pregnancy[6]. It affects function of various organs and their metabolism. Hepatic damage is seen in severe pre-eclamsia and eclampsia[7].

With this background this study was designed to see the change of liver function in PET and eclampsia in relation to normal pregnancy and normal reference value.

MATERIALS AND METHODS

This prospective cross sectional study was conducted in the Department of Gynaecology and Obstetrics, Sylhet MA G Osmani Medical College Hospital, Sylhet from January 2012 to November 2012. Consecutive patients with preeclamsia and eclampsia admitted under the department were enrolled in these study. Thirty five women of uncomplicted pregnancy were also taken as control. Women having multiple pregnancy, gestational diabetes, obesity, past history of hypertension, diabetes, renal disease, liver disease, and unwilling to take part in the study were excluded from the study.

Complete history, physical examination findings were noted. Blood samples were collected from patients and controls. Estimatiotion of levels of serum bilirubin, ALT, AST, Alkaline phosphatase, serum creatinine were performed by enzymatic assay. Urinary protein was aslo seen by heat coagulation test. The result was analysed using SPSS 12 version. Mann-whitney test was done to see significance of difference and P value <0.05 was taken as significant.

RESULTS

Consecutive 27 patients with PET and 20 patients with eclampsia were taken as cases and 35 expecting mothers with uncomplicated pregnancy were taken as controls. Age of patients varied from 26 years to 40 years (mean 33.7 years) and that of control varied from 20-35 years (mean 28.03 years). All of the cases and controls had pregnancy of either second or third trimester with mean duration of amenorrhoea 34.7 weeks and 35.51 weeks respectively (Table 1).

Table 1 : Profile of patients and controls

Patients	Controls			
	Range	Mean	Range	Mean
Age	26-40	33.7	20-35	28.03
Gravida	1-6	2.1	1-5	2.6
Duration amenorrhoea	26-40	34.7	30-39	34..51

Table 2 : Comparison of Blood pressure and LFT between patients and controls

	Patients N = 47	Normal value	Control N=35			P value
	Range	Mean	Range	Range	Mean	
BP systolic	120-240	172.55		90-130	116.42	0.00
BPdiastolic	90-140	110.88		60-85	74.12	0.00
ALT u/l	19-821	75.22	Up to 40	28-40	32.6	0.00
AST u/l	18-630	60.3	Up to 40	24-49	33.54	0.251
Bilirubin mg/dl	0.65-2.5	.93	Up to 1.0	0.6-1.3	0.86	0.703
alkalinephosphatase	140-455	251.35	Up to 250	120-367	159	0.00
Serum creatinin	.62-3.1	.92	Up to 1.2	0.7-2.8	1.03	0.00
Proteinuria present (N)	47	Absent	3	0.00		

Table 3 : Number of samples having abnormal liver and renal function

	normal reference value	raised (patients)	Raised (controls)
ALT	Up to 40 u/L	23 (48.93%)	none
AST	Up to 40 u/L	15 (31.91%)	4 (11%)
Alkaline phosphatase	up to 250u/L	12 (25.53%)	1 (2.9%)
Creatinine	0.6 – 1.2 mg/dl	6 (12.7%)	3 (8.6%)
S. Bilirubin	up to 1 mg/dl	6 (12.7%)	4 11.4%)

ALT level was normal in all controls according to normal reference range, while it was raised among 23 (48.93%) patients and difference was significant (P=0.00). AST level was elevated among 4 (11%) controls and 15 patients (31.91%). S. bilirubin level was mildly elevated among 06 patients and 04 controls without significant difference. ALP level was raised among 1 control and 12 patients where difference was significant (P=0.00). Serum creatinine level was elevated in three controls and 06 patients.

DISCUSSION

Many publications on specific causes of abnormal LFT established by problem guided investigations are available[8,9]. But epidemiology of most pregnancy related liver disorder is either unknown or partially recorded[8]. PET and eclampsia are pregnancy related complications with mortality rate less thean 1%[8]. And abormal liver function occurs in 20-30% of pregnancies complicated by PET and eclampsia[3,4] and are associated with poor maternal and fetal outcome[3].

In our study ALT, AST, bilirubin and alkaline phosphatase were elevated in 23(48.93%), 15 (31.91%), 6(12.7%) and 12 (25.53%) patients respectively which are consistent with other studies. Mechanism of raised liver enzymes is hypervascularisation and vasoconstriction of liver leading to cell injury, alteration of membrane permeability and damage to hepatocytes[9.10]. In our study levels of ALT, Alkaline phosphatase are significantly higher in PET and eclampsia in comparison to those of normal pregnant mother and normal reference level.
Women with PET and eclampsia with abnormal liver function have chance of greater proteinuria and more maternal complications than those with normal liver function[10]. In our study proteinuria among patients with PET and eclampsia were significantly higher which is consistent with other studies. But in our study outcome of pregnancy both fetal and maternal outcome were not seen. Further well designed study to see outcome of pregnancy among PET and eclampsia patients with abnormal liver function may be done. Information about abnormal liver function in patients with PETR and eclampsia may allow appropriate obstetric planning including delivery timing.

CONCLUSION

PET and eclampsia are pregnancy related hypertensive disorder those may lead to abnormal liver function. So prior information of liver function in such patients may help in planning proper intervention to improve both maternal and fetal outcome.

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