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Maternal and Perinatal Outcome of Liver Function in Severe Pre Eclampsia and Eclampsia Patients

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Background: Preeclampsia and eclampsia are common pregnancy specific multi system disorder in Bangladesh and are major causes of maternal, foetal and neonatal mortality and morbidity. **Objective:** To determine the extent of hepatic involvement in severe preeclampsia & eclampsia and its relation to fetomaternal outcome. **Methods:** It was a hospital based prospective study. This randomized clinical trial was conducted to evaluate liver function in severe preeclampsia and eclampsia on 100 patients with severe preeclampsia and eclampsia selected randomly who were admitted in department of obstetrics and gynaecology unit of Rangpur medical college and hospital through outpatient department and emergency during a time period of June 2015 to November 2015. Data was collected in preformed questionnaires after taking written informed consent from the patient or legal guardian after proper counseling.Then date was presented in graph and tabulated form and finally analyzed by SPSS version–16. **Results:** 100 patients were taken in this study–62 as eclampsia and 38 as severe preeclampsia. 0ut of 100 patients maximum (60%) were between 20-35 years of age, 62% patients were primigravida, 46% were more than 36 weeks of gestation, 53% patients were belonged to low socioeconomic status, 59% patients were primarily educated, 25% patients had no antenatal checkup and 42% were on irregular antenatal checkup. Most of the severe preeclamptic patients presented on admission with headache (65.78%) and epigastric pain (13.15%) and most of the eclamptic patient (51.61%) were conscious and 29.03% were unconscious.

Maximum patients (56%) were delivered by LSCS. In severe preeclampsia group blood urea were raised in 73.68%, S. Creatinine were raised in 71.05% and S.Uric acid were raised in 65.78%. Liver function was abnormal in 21.05% patients among them S.bilirubin was raised in 15.7%, SGPT was raised in 21.05% patients SGOT was raised in 18.42% patients. LDH was raised in 13.15% patients. In eclamptic patients' blood urea was raised in 72.58% patients, S. creatinine was raised in 66.12% patients; S. uric acid was raised in 61.29% patients. Liver function was abnormal in 22.58% patients, among them, S. bilirubin was raised in 29.03%, SGPT in 48.38%, SGOT was raised in 30.64% and LDH was raised in 45.16% patients. Maternal morbidity and mortality was more in patients with abnormal liver function. It maternal mortality was 12.5% in severe preeclamptic patients and 14.28% in eclamptic patients with abnormal liver function. Perinatal morbidity and mortality was also higher in patients with abnormal liver function. Perinatal mortality was 62.5% in severe preeclamptic patients and 42.85% in eclamptic patients with abnormal liver function. **Conclusion:** From this study it was found that abnormal liver function in patients with severe preeclampsia and eclampsia, affect both maternal and fetal outcome negatively. Therefore, prior information of liver function in such patients may help to reduce maternal and perinatal mortality and morbidities.

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INTRODUCTION

It is the greatest boon of almighty Allah to become a mother for a woman. Every woman wants to be a mother of a healthy baby. But sometimes pregnancy imposes a greater risk of a woman's life. Maternal mortality remains one of the five leading causes of death among reproductive age women in almost all developing countries. In Bangladesh although maternal mortality declined from 322/100,000 live birth in 2001 to 194/100,000 live birth in 2010, it is still very high. Committing to achieving the millennium Development Goal (MDG), Bangladesh's targets are to reduce the maternal mortality ratio to 143 per 100,000 live births by 2015 [1]. Pre eclampsia and eclampsia are the common hypertensive disorders of pregnancies and remain a major cause of maternal, fetal and neonatal morbidity and mortality[2]. As preeclampsia & eclampsia are multi system disorder so they can affect every maternal organ predominantly the vascular, renal, hepatic, cerebral and coagulation systems[3]. Pathophysiology of preeclampsia and eclampsia is not clearly known[4]. Pregnancy termination reverses the clinical manifestations of the disease, suggesting that trophoblastic invasion has a central role in the pathogenesis of preeclampsia and eclampsia[5]. An estimated 50,000 women worldwide die annually from preeclampsia[6]. Preeclampsia affects 2-10% of pregnant women world-wide & eclampsia 0.03-0.05%. The reported incidences of eclampsia in developing countries are between 0.1 to 0.2 per 100 deliveries while in the western world it is 1 in 2000 to 1 in 3000 [7]. Preeclampsia & eclampsia are important risk factors of maternal morbidities like persistent hypertension or renal disease etc. making these diseases of reproductive aged women a particularly important public health problem [8]. Approximately 10-15% of maternal deaths in

developing countries are associated with preeclampsia leading to eclampsia[9]. The incidence of Eclampsia is extra ordinarily high in Bangladesh – 7.9% [10]. Majority of the cases of eclampsia are the patients who have not received proper medical attention during their antenatal period [11]. In Bangladesh only 23.4% of pregnant receive antenatal care through the private sector or public sector[1]. The rest have no access to obstetric care. As a result preeclampsia remains unrecognized until severe complications such as eclampsia; occur.[10] Pregnancy is associated with significant change in the functions of normal liver. In normal pregnancy the liver function tests are either normal or slightly increase or decrease but within normal range. Thus an increase in serum alanine aminotransferase (ALT), Serum Aspartate aminotransferase (AST), serum bilirubin & total bile acid concentration during pregnancy may be pathologic and should prompt further evaluation[12]. Serum albumin level and bilirubin concentrations are significantly low during all three trimesters of pregnancy, due to hemodilution and Serum alkaline phosphatase (ALP) concentrations are considerably higher. The prothrombin time (PT) remains unchanged during pregnancy & serum fibrinogen increase in late pregnancy[12, 13, 14]. Liver function tests abnormalities occur in 3% of the pregnancies and pre-eclampsia and eclampsia are the most frequent causes [12, 13, 14]. Prevalence of abnormal liver function tests in pregnancy complicated by pre- eclampsia & eclampsia varies from 20-30% [15,16]. Due to alteration of liver function in pre eclampsia & eclampsia, there is marked increase in ALT, AST and LDH occurs. Hemolysis, elevated liver enzymes & low platelet count (HELLP Syndrome) have been well described which complicate up to 10% cases of severe PE and up to 50% cases of Eclampsia[17]. Women with preeclampsia or eclampsia associated with abnormal liver function have greater chance of maternal and fetal complication than those with normal liver function[4]. Eclampsia is a preventable disease if preeclampsia is timely diagnosed by antenatal care. By giving quality antenatal care, mass awareness regarding the importance of antenatal care, emergency obstetric service in Upazilla health complex we can prevent eclampia [18]. Thus proper antenatal care, early diagnosis of preeclampsia and timely intervention, prompt decision making and proper management will reduce the maternal and perinatal mortality and morbidity due to preeclampsia and eclampsia. Therefore the current study will be performed to detect liver function in severe preeclampsia and eclampsia and maternal & perinatal outcome of these cases.

MATERIALS AND METHODS

Study design: It was a hospital based prospective cross sectional study.

Study period: From June 2015 to November 2015 (6 Month period).

Place of study: The Study was carried out in the department of obstetrics and gynaecology (indoor) of Rangpur Medical College and Hospital, Rangpur, Bangladesh.

Study population: Out of 3990 Obstetrics admission during this study period 208 patients were diagnosed as eclampsia and 146 were diagnesad as severe preeclampsia after getting admission by history, clinical examination and some baseline investigations and liver function tests available in this hospital. Out of them 140 (67.30%) were diagnosed as antepartum eclampsia. This study included 100 randomly selected patients with severe preeclampsia and eclampsia who fulfilled the inclusion criteria admitted during the study period.

Sampling Method: Patient was selected randomly from all the severe preeclampsia and eclampsia admitted in obstetric ward with gestational age > 28 weeks after taking proper history, clinical examination and bedside urine examination for albumin.

Inclusion criteria:

- Patients with severe pre eclampsia and eclampsia with gestational period after 28 weeks.

Exclusion criteria:

- Severe pre eclamptic and eclamptic patients with gestational age less than 28 weeks.
- Cases, who died undelivered.
- Severe preeclamptic and eclamptic patients having other causes of hepatitis like viral hepatitis, cirrhosis of liver, gallstones and medical disorders that alter liver function.

After admission of the patient in inpatient department of obstetrics ward a thorough history was taken from the patient or attendants followed by relevant clinical examination and bed side urine examination for albumin. 100 patients were selected, 38 with severe preeclampsia and 62 with eclampsia after satisfying inclusion criteria volunteering to participate were included in the study. After taking written informed consent each patient was questioned in details and data was collected in the predesigned questionnaire. Diagnosis was confirmed by history, clinical examination some base line investigations, liver and kidney function test. For liver function test SGPT, SGOT, Serum bilirubin, LDH were done, but due to limited availability and affordability of our patients and hospital all the investigations used to assess liver function was not possible for every cases. Biochemical Changes in liver function and its relation with pregnancy out come in patients with severe preeclampsia and eclampsia were observed. Mode of delivery which is common whether caesarean section on vaginal delivery were observed. Maternal outcome in patients with abnormal liver function and in patients with normal hepatic function was measured by maternal morbidity like PPH, Abruptio placenta, HELLP syndrome, DIC, pulmonary oedema, ARF and by maternal death. Causes of maternal death were also recorded. Any complications during hospital stay like wound infection, puerperal sepsis or raised blood pressure were also recorded. Perinatal outcome in severe preeclamptic and eclamptic patients with abnormal liver function and with normal liver function were observed by alive healthy baby, birth weight in Kg, IUGR, prematurity, birth asphyxia, prenatal death and duration of hospital stay. During the period of hospital staying, whether the baby develop any complication like neonatal sepsis, pneumonia or any development of pathological jaundice were also recorded.

Statistical analysis: Collected data was edited, cleaned, compiled and analyzed using computer based software, the statistical package for social science (SPSS) version-16. Qualitative data was analyzed as rate, proportion, percentage. Quantitative data was analyzed, as mean, standard deviation.

RESULTS

Table-1: Distribution of patients as per demographic profile and other parameters (N=100)

Age in year	N (%)	Parameter	N (%)	Gestational age in weeks	N (%)	Education level	N (%)
<20	28(28%)	Primigravidae	62(62%)	28 – 31	21(21%)	Illiterate	32(32%)
20-35	60(60%)	Primipara	16(16%)	32-35	33(33%)	Primary	59(59%)
>35	12(12%)	Multipara	22(22%)	>36	46(46%)	Secondary	7(7%)
						Higher Secondary	2(2%)

Table-1 shows that mean (±SD) age of the patients were years ranging from <20 to >35 years. Maximum patients were in the age group 20-35 years (60%), followed by <20 years (28%) and lowest in the age group more than 35 years (12%). maximum (62%) patients were primigravida, 22% was multipara and 16% was primipara. Table-1 shows that the mean (±SD) gestational week of the patients was (21%) week ranging from 28 to >36 weeks. Highest percentage (46%) had more than 36 weeks of gestation followed by 33% had 32–35 weeks and another (21%) had 28 – 31 weeks of gestation. 91% patients did not cross primary education level. 59% patients were primarily educated; 32% patients were illiterate.

Table-2: Distribution of patients as per Antenatal Visit, Socioeconomic Status and mode of delivery (N=100)

Antenatal Visit	N (%)	Socioeconomic Status	N (%)	Mode of delivery	N (%)
Regular	13(13%)	Low(Monthly income taka 5000)	53(53%)	Vaginal delivery	44(44%)
Irregular	42(42%)	Lower middle (Monthly income taka 5000-10,000)	43(43%)	Caesarean section	56(56%)
No Checkup	45(45%)	Upper middle (Monthly income taka 10,000-30,000)	4(4%)		0(0)

Table-2 shows that only 13% patients were on regular antenatal checkup. 42% patients were on irregular and 45 % patients had no antenatal checkup. Maximum (53%) patients were from low socioeconomic status. (43%) were from lower middle class and only 4% were from upper middle class. Shows that 44% patients had vaginal delivery and 56% patients had undergone Caesarean section.

Table-3: Clinical presentations of severe preeclamptic Patients and level of consciousness of the eclamptic patients (N=100)

Clinical presentations Number of patients (n=38)	N	Percentage
Headache	25	65.78%
Nausea/vomiting	3	7.89%
Epigastric pain	4	13.15%
Right upper quadrant tenderness	2	5.26%
Blurred vision	2	5.26%
Respiratory distress	1	2.60%
Level of consciousness Number (n = 62)		
Unconscious	16	25.80%
Conscious	32	51.61%
Semiconscious	14	22.58%

Table-3: shows that 25 (65.78%) of severe Preeclamptic patients presented with headache, 3 (7.89%) with nausea/vomiting, 5(13.15%) with epigastric pain, 2 (5.26%) with right upper quadrant tenderness, 2(5.26%) with blurring of vision and 1 (2.6%) with respiratory distress. More than half 32 (51.61%) patients with eclampsia were conscious at the time of admission followed by 16 (25.80%) were unconscious. However 14 (22.58%) were semiconscious at the time of admission.

Table-4: Biochemical and hematological findings in severe preeclamptic and eclamptic patients (N=100)

preeclamptic	N (%)	eclamptic	N (%)
Blood urea		Blood urea	
(N. range 15 – 45 mg/dL)		(N. range 15 - 45 mg/dL)	
normal	10(26.31%)	Normal (<45 mg/dL)	17(27.41%)
Abnormal	28(73.68%)	Abnormal (>45 mg/dL)	45(72.58%)
Serum creatinine		Serum creatinine	
(N. range 0.6-1.2 mg/dL)		(N. range 0.6-1.2 mg/dL)	
Normal	11(28.94%)	Normal (<1.2 mg/dL)	21 (33.87%)
abnormal	27(71.05%)	Abnormal (>1.2 mg/dL)	41 (66.12%)
Serum uric acid		Serum uric acid	
(N. range 2.4-5.7 mg/dL)		(N. range 2.4-5.7 mg/dL)	
Normal	13(34.21%)	Normal	24(38.70%)
abnormal	25(65.78%)	Abnormal	38(61.29%)
Platelate count		Platelate count	
(N. range 1, 50,000-4,00,000)		(N. range 1,50,000-4,00,000)	
Normal	34(89.47%)	Normal	49(79.03%)
Abnormal	4(10.52%)	Abnormal	13(20.96%)

Table-4: shows that blood urea were raised in 28(73.68%) patients, serum creatinine raised in 27(71.05%) patients, serum uric acid raised in 25(65.78%) patients and platelate count was less than normal in 4(10.52%) patients with severe preeclampsia. Blood urea were raised in 45(72.58%) patients, S. creatinine were raised in 41 (66.12%) patients, S. uric acid raised in 38 (61.29%) patients. However platelate counts were decreased in 13 (20.96%) patients.

Table-5: Abnormal liver function in severe preeclamptic and eclamptic patients (N=100)

preeclamptic	N (%)	eclamptic	N (%)
Number of patients with		Number of patients with	
abnormal liver function	8(21.05%)	abnormal liver function	14(22.58%
S. bilirubin		Serum bilirubin	
(N. range 0.2 – 1.1 mg/dL)		(N. range 0.2-1.1 mg/dL)	
≥2 mg/dL	6(15.7%)	≥2 mg/dL	18(29.03%

SGPT		SGPT (ALT)	
(ALT) (N. range 5-40 IU/L)		(N. range 5-40 IU/L)	
≥40 IU/L	8(21.05%)	≥40 IU/L	30(48.38%
SGOT		SGOT (AST)	
(AST) (N. range up to 37IU/L)		(N. range upto 37 IU/L)	
≥40 IU/L	7(18.42%)	≥40 IU/L	19(30.64%
LDH		LDH	
(N. range 70-240 IU/L)		(N. range 70-240 IU/L)	
≥600 IU/L	5(13.15%)	≥600 IU/L	28(45.16%

Table-5 shows that 8 (21.05%) patients with severe preeclampsia had abnormal liver function i.e. S. bilirubin was raised in 6 (15.7%) patients, SGPT was raised in 8 (21.05%) patients, SGOT raised in 7 (18.42%) patients and LDH was raised in 5 (13.15%) patients. 14 (22.58%) patients with eclampsia had abnormal liver function i.e. S. bilirubin was raised in 18 (29.03%) patients, SGPT raised in 30 (48.38%) patients, SGOT raised in 19 (30.64%) patients and LDH raised in 28 (45.16%) patients.

Table-6: Relationship between perinatal outcome and liver function in severe preeclamptic and eclamptic patients (N=100)

preeclamptic				eclamptic			
Perinatal outcome	Normal liver function (n=30) No (%)	Abnormal liver function n=8 No (%)	Total Number n=38 N (%)	Perinatal outcome	Normal liver function (n=48) N (%)	Abnormal liver function (n=14) N (%)	Total number n=62 N (%)
Alive	22(73.33)	3(37.5)	25(65.78)	Alive	34 (70.83)	9 (64.28)	43(69.35)
IUGR	4(13.33)	2 (25)	6(15.78)	IUGR	5 (10.42)	3 (21.42)	8 (12.90)
Prematurity	13 (43.33)	4 (50)	17(44.73)	Prematurity	15 (31.25)	6 (42.85)	21(33.87)
Birth asphyxia	3 (10)	3 (37.5)	6 (15.78)	Birth asphyxia	8 (16.66)	8 (57.14)	16(25.80)
Perinatal death	8 (26.66)	5 (62.5)	13(34.21)	Perinatal death	13 (27.08)	6 (42.85)	19(30.64)
Still born	4 (13.33)	3 (37.5)	7 (18.42)	Still born	7 (7.95)	3 (21.42)	10(16.12)
Neonatal death	2 (6.66)	4 (50)	6 (15.78)	Early neonatal death	7 (7.95)	2 (14.28)	9 (14.51)

Table-6 shows that out of 25 (65.78%) alive babies 22 (73.33%) had normal liver function and 3 (37.05%) had abnormal liver function in preeclamptic cases. Out of 13 (34.21%) perinatal death 8 (26.66%) had normal liver function and 5 (62.5%) had

abnormal liver function. IUGR 2(25%), Prematurity 4 (50%) and Birth asphyxia 3 (37.5%) was also high in patients with abnormal liver function. Table-6 shows that out of 43 (69.35%) alive babies 34 (70.83%) had normal liver function and 9 (64.28%) had abnormal liver function in eclamptic patients. Out of 19 (30.64%) perinatal death 13 (27.08%) had normal liver function and 6 (42.85%) had abnormal liver function. IUGR 3 (21.42%), Prematurity 6 (42.85%) birth asphyxia 8 (57.14%) was also high in patients with abnormal liver function.

Table-7: Relationship between maternal outcome and liver function in severe preeclamptic and eclamptic patients (N=100)

preeclamptic				eclamptic			
Maternal complications	Normal liver function (n=30) N (%)	Abnormal liver function n=8 N (%)	Total N=38 N (%)	Maternal complications	Normal liver function (n=48) N (%)	Abnormal liver function (n=14) N (%)	Total (N=62) N (%)
Postpartum haemorrhage	4 (13.33)	3 (37.5)	7 (18.42)	Post-partum haemorrhage	7 (14.58)	6 (42.85)	13 (20.9)
Abruptio placenta	1 (3.33)	1(12.5)	2 (5.26)	Abruptio placenta	2 (4.16)	1 (7.14)	3 (4.83)
HELLP syndrome	0 (00)	2 (25)	2 (5.26)	HELLP syndrome	0 (00)	2 (14.28)	2 (3.22)
Ascitis	1 (3.33)	1 (12.5)	2 (5.26)	DIC	0 (00)	1 (7.14)	1 (1.61)
Pulmonary oedema	3 (10)	1 (12.5)	4 (10.52)	Pulmonary oedema	4 (8.33)	2 (14.28)	6 (9.67)
Acute renal failure	0 (00)	1 (12.5)	1 (2.63)	Acute renal failure	0 (00)	1 (7.14)	1 (1.61)
Maternal death	1 (3.33)	1 (12.5)	2 (5.26)	Maternal death	3 (6.25)	2 (14.28)	5 (8.06)

Table-7 shows that regarding the maternal complication of severe preeclamptic cases out of 7(18.42%) postpartum haemorrhage 4 (13.33%) had normal liver function and 3 (37.5%) had abnormal liver function. Out of 2 (5.26%) abruptio placenta 1 (3.33%) had normal liver function and 1 (12.5%) had abnormal liver function.Out of 2 (5.26%) HELLP syndrome 2 (25%) had abnormal liver function. Out of 2 ascitis 1 (12.5%) had abnormal liver function. Out of 4 (10.52%) pulmonary oedema 3 (10%) had normal and 1 (12.5%) had abnormal liver function. Out of 1 ARF 1 (12.5%) had abnormal liver function. Regarding maternal death out of 2(5.26%) 1(3.33%) had normal liver function and 1(12.5%) had abnormal liver function. Table-7 shows that regarding the maternal outcome of eclamptic patients out of 13(20.96%) PPH 7(14.58%) had normal liver function and 6(42.85%) had abnormal liver function. Out of 3(4.83%) abruptio placenta 2(4.16%) had normal liver function and 1(7.14) had abnormal liver function. Out of 2(3.22%) HELLP syndrome 2(14.28%) had abnormal liver function. Out of 1(1.61%) DIC

1 (7.14%) had abnormal liver function. Out of 6(9.67%) pulmonary oedema 4 (8.33%) had normal liver function and 2 (14.28%) had abnormal liver function. Out of 5 (8.06%) maternal death 3(6.25%) had normal liver function and 2 (14.28%) had abnormal liver function.

DISCUSSION

In 21st century modern Obstetrics has developed a lot but preeclampsia and eclampsia still remain a great challenge, because the etiology of preeclampsia is unknown and the direct cause of eclamptic convulsions is also not known. The mechanisms driving the abnormal elevation of liver enzymes SGOT, SGPT etc. leading to preeclampsia are unclear. In preeclampsia hypervascularization and vasoconstriction of liver leads to liver cell injury and alteration of cell membrane permeability and damage to the cells which allows intracellular enzyme to leak into the blood, leads to elevated liver enzymes, and causes abnormal liver function.[19] So all the Obstetricians need to be familiar with pregnancy physiology and the current concepts in the pathophysiology of severe Preeclampsia and eclampsia.[10]A team of Obstetricians and other specialists such as cardiologist, hepatologist, hematologist, nephrologists and neurologists and anesthetist and nurses with interest and experience are needed in an ICU to protect eclamptic mother from death.[10] Abnormal liver function occus in 20-30% of pregnancies complicated by Preeclampsia and eclampsia and are associated with poor maternal and fetal outcome. The purpose of this study was to evaluate the ill effects of abnormal liver function on severe Preeclamptic and eclamptic mother and fetus in our circumstances. Most women with pregnancy induced hypertensive disorders are symptom less which is an important point for frequent antenatal visit particularly in late pregnancy. There is no test that reliably indicates who will develop this polymorphic disease.[20] Treatment is restricted to symptomatic management and expedited delivery is the only way to resolve the disease. In severe preeclampsia delivery should occur within 24 hours of the onset of symptoms; eclampsia within 12 hours of the onset of convulsions or fits. [21] This study has conducted in RMCH which is one of the most important referral Hospital of North Bengal. This study found the mean age of the patients were (60%) years ranging from <20 years to >35 years. Maximum patients (60%) were in the age group 20-35 years. It is consistent with the study of Stein grub J.S in which 70% patients was between 27 to 36 years of age.[22] In Hussain H. study (2009) in Dhaka Medical College the mean age was 23.50± 4.06 years ranging from 18 to 35 years.[23] In Present study maximum 62% patients were primigravida. It correlates with Naib J.M et al. where maximum 72% patients were primigravida.[24] This study found 46% patients were more than 36 weeks gestation. Which correlates with the study of Hussain H. in which 46.76% was >36 weeks of gestation.[23] But it differs from Liu C.M et al. study where maximum patients were between 33 – 36 weeks.[25] In present study 59% patients were primarily educated and 32% were illiterate. In the study of Ndaboine E et al. 75% were primarily educated and Akhter R. et al. showed 49% illiterate.[18,26] This study showed 45% patients had no antenatal checkup and 53% were from low socioeconomic status. In study of Akhter R et al. 60% patient had no antenatal checkup and 72% were from low socioeconomic status. In this study 56% patients were delivered by caesarean section which is consistent with sultana et al. study where 58% patients were delivered by caesarean section.[27] In present study 65.78% of severe Precelamptic patients presented with headache, 7.89% with Nausea or vomiting 13.15% with epigastric pain, 5.26% with right upper quadrant pain which are consitent with Sultana et al.[27] study where 68.5% patients with severe Precelampsia presented with headache, 12.3% with

epigastric pain. In this study 51.61% patients with eclampsia were conscious. This is consistent with Hussain's study[23] where 58.03% were conscious and 25.25% were unconscious. But Akhter R et al.[18] study showed 4% patient with eclampsia were unconscious. This study showed that blood urea were raised in 73.68% patients, S. creatinine raised in 71.05%, but uric acid raised in 65.78% and platelate count decrease in 10.52% of severe preeclamptic patients. In eclamptic, cases blood urea were raised in 72.58% patients, S. Creatinine raised in 66.12% but uric acid raised in 61.29% and platelate count decrease in 20.96% patients. This is consistent with Hussain's study (2009).[23] Regarding liver function tests this study showed that in Precelamptic patients S. bilirubin, SGPT, SGOT and LDH were raised in 15.7%, 21.05%, 18.42% and 13.15% respectively. In eclamptic patients S. bilirubin, SGPT, SGOT and LDH were raised in 29.03%, 48.38%, 30.64% and 45.16% respectively. 21.05% patients with precelampsia and 22.58% patients with eclampsia had abnormal liver function. It is supported by Bhowmik D.K et al.[4] and Steingrub J.S [22] study where abnormal liver function tests were in 20-30% patients with preclampsia and eclampsia. But Girling J.C et al.[15] reported 54% abnormal liver function in precelamptic patients, Kozic J.R et al.[28] reported 53% abnormal liver function preclamptic cases. This study found 25 alive babies 73.33% had normal liver function and 37.5% had abnormal liver function in preclamptic patients. IUGR (25%), prematurity (50%) and birth asphyxia (37.05%) were more in patents with abnormal liver function. Out of 13 perinatal death 26.66% had normal liver function and 62.5% had abnormal liver function. Similar result was found in Hussain's study[23]. Kozic J.R et al.[28] reported perinatal death 3.5% with abnormal liver function and Rathi U. et al.[29] reported 44% of perinatal death in abnormal liver function. In eclamptic patients out of 43 alive babies 70.83% had normal liver function and 64.28% had abnormal liver function. Out of 19 perinatal death 27.08% had normal liver function and 42.85% had abnormal liver function. IUGR (21.42%), prematurity (42.85%) and birth asphyxia (57.14%) were more in patients with abnormal liver function. In the study of Dhananjay B.S et al.[2] perinatal death in eclampsia was 44%. Regarding maternal complications this study showed in preeclamptic patients PPH (37.5%), abruptio placenta (12.5%), HELLP syndrome (25%), pulmonary oedema (12.5%) were more in patients with abnormal liver function. In eclamptic patients PPH (42.48%), abruptio placenta (7.14%), HELLP syndrome (14.28%), DIC (7.14%) etc. were also more in patients with abnormal liver function. This study's findings of preeclampsia and eclamclampsia associated morbidities concur with the findings of several different studies.[5,10,18,27,30] This study showed out of 2(5.26%) maternal death 3.33% had normal liver function and 12.5% had abnormal liver function in preeclamptic patients. In eclamptic patients out of 5(8.06%) maternal death 6.25% had normal liver function and 14.28% had abnormal liver function. This was consistent with the study of Baha M et al.[29] Boopathi A et al. [31] In the present study maternal and perinatal outcome was poor in patients with abnormal liver function in severe preeclampsia and eclumpsia. The study done in small group of patients for a small period of time. This study could be more informative if sample size was larger and study period was longer. Since most of the pregnant women in this study were unbooked cases or referred at this tertiary care hospital their base line blood pressure could not be documented to know if they were hypertensive before pregnancy. Almost all of the eclamptic patients came to the hospital after the development of convulsion. As a result we could not record the cases as

antepartum or intrapartum when they came in labour.

CONCLUSION

Preeclampsia and eclampsia are pregnancy related hypertensive disorder those may lead to abnormal liver function. From this study it was found that a higher magnitude of abnormal liver function is associated with increased occurrence of adverse maternal and perinatal outcome i.e. prognosis is poor for those who have abnormal liver function. Information about abnormal liver function in patients with severe preeclampsia and eclampsia may allow appropriate Obstetric planning including delivery timing. Early diagnosis, prompt referral to a higher center when required, appropriate supportive management and a pro-active policy when indicated may improve the maternal and fetal outcomes in this cases with abnormal liver function. A moderate reduction of maternal perinatatal death and improvement of maternal and perimatal outcome in our institution is possible if prior information about abnormal liver function in preeclamptic and eclamptic patients are obtained and planning and timely intervention is undertaken. Abnormal liver function (i.e raised S. bilirubin, SGPT, SGOT, LDH) have significant association with severity of disease and poor maternal and fetal outcome. So abnormal liver function can be considered as supportive prognostic tool from early third trimester.

Conflict of Interest: None.

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