HEPATIC DYSFUNCTION CONCURRENT WITH ANTEPARTUM ECLAMPSIA

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ABSTRACT

BACKGROUND

The study is conducted on patients of antepartum eclampsia to detect liver dysfunction and its effect on maternal outcome.

MATERIALS AND METHODS

This is a retrospective cross-sectional study conducted in the department of Obstetrics and Gynaecology of Government Medical College, Kozhikode for one year from June 2016 to May 2017.

RESULTS

There were 54 antepartum eclampsia patients. Among these, 70.4% were with liver dysfunction (group 1), and 29.6% were without liver dysfunction (group 2). Majority of the patients in both the groups belonged to gestational age between 32-37 weeks. The systolic and diastolic blood pressure were comparable between the groups. The mean platelet count and serum albumin levels were significantly low in group 1 patients. The mean SGOT, SGPT and LDH levels were significantly higher in group 1 patients. Maternal complications were seen only in patients of group 1 and mainly were abruptio placentae, postpartum haemorrhage (PPH), pulmonary oedema and acute renal failure. Platelet value improved within 24 hours in 44.7% of group 1 patients. SGOT, SGPT, LDH and serum albumin took longer time to recover.

CONCLUSION

Antepartum eclampsia is a leading cause of high maternal morbidity and mortality which may be attributed to the late detection, referral and delay in timely management of pre-eclampsia. A multidisciplinary approach involving the medical and para-medical staff, proper patient information and intervention will improve both maternal and foetal outcome.

KEYWORDS

Eclampsia, HELLP syndrome, PPH, Pulmonary oedema, Acute renal injury.

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BACKGROUND

The term eclampsia is derived from a Greek word, meaning "like a flash of lightening". It may occur quiet abruptly, without any warning symptoms. In majority (over 80%); however, the disease is preceded by features of severe pre-eclampsia. Pre-eclampsia when complicated with convulsion and/or coma is called eclampsia. While in the developed countries, it's prevalence is far and few but in the developing ones, particularly in the rural areas, it is still rampant and contributes significantly to the maternal deaths. The hospital incidence in India ranges from 1 in 500 to 1 in 30. This specific hypertensive syndrome, when severe, can cause substantial maternal and foetal morbidity and mortality.[1,2] In developing countries, the case fatality ratio is up to 14% with eclampsia in relation to 1.8% in developed countries.

Abnormal liver function tests occur in 20–30% of pregnancies complicated by pre- eclampsia and eclampsia and are associated with poor maternal and foetal outcome. Antepartum eclampsia is associated with increased rates of maternal complications like abruptio placentae, pulmonary oedema, HELLP syndrome and acute renal failure. Majority of women who suffered eclampsia associated death had concurrent HELLP syndrome.[3] Eclampsia is preventable, and these adverse outcomes can be avoided by proper prediction, timely diagnosis and early management of pre-eclampsia. Perinatal morbidity and mortality appears to be related to prematurity and gestational age at delivery.

In this background, we are conducting a study on patients with antepartum eclampsia concurrent with liver dysfunction and its effect on maternal outcome.

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Aims and Objectives

1. To study the prevalence of abnormal liver function in cases of antepartum eclampsia.
2. To study the effect of liver dysfunction on maternal outcome.
3. To compare the maternal outcome in cases of antepartum eclampsia with liver dysfunction and cases without liver dysfunction.

MATERIALS AND METHODS

This retrospective cross-sectional study was conducted in the department of Obstetrics and Gynaecology, Government medical college, Kozhikode, a tertiary care teaching institution, for 1 year from June 2016 to May 2017. Cases were identified from parturition register. Demographic and clinical data were collected from the medical records of patients with antepartum eclampsia. All women received intravenous magnesium sulphate, which is the standard regime and nifedipine and labetalol to control blood pressure. Blood and blood products were used to correct severe anaemia or coagulation abnormalities as needed.

Gestational age was determined clinically and by ultrasonography. Maternal condition was assessed clinically and by the haematological, liver and renal function results and termination of pregnancy was done. Patients were monitored by repeating the investigations 12 hourly till delivery and every 24 hrs postpartum. Delivery time and complications were noted. The comparison of maternal condition was made with regard to haematological and biochemical examination results, duration of recovery of liver functions, maternal mortality, requirement of transfusion of blood and blood products, abruptio placentae, disseminated intra vascular coagulation (DIC), acute renal failure, pulmonary oedema, thrombo-embolism, atonic PPH, haematoma, neurological signs, requirement of intensive care and mechanical ventilation.

Statistical analysis was done using SPSS version 16.0 for windows. Qualitative data was presented as frequency and percentage and quantitative data as mean and standard deviation (SD) if normal, or as median and interquartile range (IQR). Comparison between the groups was done by Chi – square or Fisher's exact test for qualitative data and by Student's t test Mann Whitney U test quantitative data. A two-sided P value <0.05 was considered as statistically significant.

RESULTS

In the present study, 54 patients of ante-partum eclampsia were categorised in to two groups. Patients of ante-partum eclampsia with concurrent liver dysfunction as Group 1 and the rest as Group 2. Among these patients, 38(70.4 %) were with liver dysfunction on admission, and were labelled as group 1 and Group 2 had 16(29.6%) patients, without liver dysfunction.

Variable	Group 1		Group 2		P value
Age	24.3 Mean	4.6 SD	23.3 Mean	4.2 SD	0.459
Parity					
Primi multi	28	73.7%	11	68.8%	0.747
GA (wks.)					
28-32	12	31.6%	2	12.5%	
32-37	21	55.3%	8	50%	0.065
>=37	5	13.1%	6	37.5%	

Table 1. Demographic Variables

Table 1 shows the demographic variable of the study group like the age, parity and gestational age.

BP	Group 1		Group 2		P
	Mean	SD	Mean	SD	
Systolic BP	156.7	25.8	153.1	22.7	o.634
Diastolic BP	100.6	14.8	95.6	13.6	0.256

Table 2. Blood Pressure

Table 2 shows the mean systolic and diastolic blood pressure between the groups.

	Group 1		Group 2		P
	mean	SD	Mean	SD	
Platelets (Lakhs/cu.mm)	1.86	0.84	2.62	0.43	0.001
SGOT(IU/L)	63	52	29	29	0.004
SGPT(IU/L)	27	60	12	14.2	0.001
LDH(IU/L)	980	721	498.5	240	0.0001
Albumin(g/dl)	2.71	0.35	2.88	0.35	0.124

Table 3. Liver Functions and Platelets

Table 3 shows the comparison of liver function parameters and platelet levels between group 1 and 2.

	Group 1	Group 2
Abruption	2 (5.2 %)	0
PPH	1 (2.6 %)	0
Pulmonary oedema	1 (2.6%)	0
Acute renal injury	1 (2.6%)	0

Table 4. Maternal Complications

Table 4 shows the maternal complications in the study population.

LFT	24 hrs		48 hrs.		>48 hrs.	
Platelets	n=17	44.7%	n=5	13.2%	n=16	42.1%
SGOT	n=10	26.3%	n=4	10.5%	n=24	63.2%
SGPT	n=16	42.1%	n=4	10.5%	n=18	47.4%
LDH	n=8	21.1%	n=10	26.3%	n=20	52.6%
Serum albumin	n=12	31.6%	n=8	21.1%	n=18	47.4%

Table 5. Shows the Time taken for Abnormal Liver Parameters to Recover in Group 1 Patients

Table 5 Recovery time (in hrs).

DISCUSSION

Hypertensive complications of pregnancy including antepartum eclampsia remains leading cause of maternal death. Eclampsia is a major contribute to maternal and perinatal morbidity & mortality.[1,2] Eclampsia with concurrent liver dysfunction and platelet abnormality is a dangerous complication associated with pregnancy.[2,3]

The present study included all the cases of ante partum eclampsia during the study period of one year. There were 54 patients with ante-partum eclampsia. Out of this, 38(70.4%) patients had associated platelet abnormality and liver dysfunction. This incidence is as high as 70%, which is in contrast to the results from other studies. The study by X.Di, H. Liu, D. Chen et al on concurrent eclampsia and HELLP syndrome showed the incidence of 22.4%.[4] The study by Vigil- De Gracia et al showed the incidence to be 27.6%.[5]

Table 1 shows the mean age, parity and the gestational age distribution between the groups. In group 1, the mean age was 24.3 years and in group 2, it was 23.3 years. The mean age was comparable between the groups. It also shows the parity and gestational age distribution and the parameters were all comparable between the two groups. In group one, 73.7% were primigravida. This was similar to the results obtained by the Sharon Keiser, Michelle Owens et al, which showed the proportion of nulliparity were high in patients with eclampsia with HELLP syndrome.[6]

In group 1, majority (55.3%) of the patients belonged to the gestational age group between 32-37 weeks, and 31.6% belonged to 28-32 weeks. This was similar to the results obtained by Martin Jn et al, i.e. eclampsia is more likely to be associated with HELLP syndrome at early gestation.[7]

Table 2 shows the mean systolic and diastolic blood pressure distribution between the groups. The mean systolic and diastolic blood pressure were 156.7 mmHg (p=0.634) and 100.6 mmHg (p=0.256) in the present study.[6] Sharon Keiser, Michelle Owens et al found a lower systolic blood pressure at admission (p=0.0170) and at delivery (p=0.0509) in eclampsia HELLP syndrome patients. This is in contrast to the results obtained by Vigil De Gracia et al, which showed severe systolic hypertension (>160 mmHg) and severe diastolic hypertension (>110 mmHg) were significantly more common among patients of eclampsia with HELLP syndrome[5] which is comparable to our study.

Table 3 shows the platelet and the liver function parameters in both the groups. The mean platelet values were 1.86 lakhs/cu.mm and 2.62 lakhs/cu.mm in group 1 and group 2 respectively. The median AST, ALT and LDH values were 63 IU/L, 27 IU/L and 980 IU/l respectively in group 1 as compared to 29 IU/L, 12 IU/l and 498.5 IU/l in group 2. The median LDH value was high in group1.[8] This is similar to the results obtained by S P Jaiswar et al, which showed 69.4% of patients with eclampsia had LDH >800 IU/L while only 19.4% had levels between 600 and 800 IU/L. They also observed that there is a significant rise in LDH levels with increasing severity of the disease.[9] Andrews L et al found a statistically significant relation between elevated liver enzymes and maternal deaths. But this is in contrast to the study by[10] Dr. Y. Ruth Lavanya et al, where no significant variation was found in LDH raise along with severity of the disease.

Table 4 shows the maternal complications in both the groups. Complications were seen only in group 1 patients and were mainly abruptio placentae, postpartum haemorrhage (PPH), pulmonary oedema and acute renal injury. This is similar to the results obtained by[4] X. Di, H. Liu et al in their study. Though the incidence of abruptio placentae was comparable with study conducted by[11] Dr. Mohana Dhanapal, the incidence of PPH and acute renal injury was higher. Comparable results on maternal complications were obtained by Raji C et al, Praveen Kumar AM et al and others.[12,13,14,15,16]

Table 5 shows the time taken for the abnormal parameters to recover. In 44.7% of the patients, platelet level improved within 24 hours. AST, ALT, LDH and serum albumin levels took more time (>48 hours) to recover.

CONCLUSION

In our study, the demographic variables were comparable between the groups. The mean platelet count and serum albumin were significantly low and median AST, ALT and LDH values significantly high for group 1 patients. Though platelet values improved within 24 hours in 44.7% of the cases, AST, ALT, LDH and serum albumin took more than 48 hours to recover in 63.2%, 47.4%, 52.6% and 47.4% of the patients respectively.

Deterioration of function in a number of organs and systems has been identified in severe pre-eclampsia and eclampsia and these effects subsequently leading to end-organ derangements. Eclampsia still remains an obstetric emergency contributing to significantly high maternal morbidity and mortality which may be partly attributed to the late referral and delay in timely management of pre-eclampsia. Though not preventable always, a multi-disciplinary approach involving the medical as well as the para-medical staff and a proper patient information and intervention will improve both maternal and foetal outcome.

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