

Original Research Article

Evaluation of maternal and perinatal morbidity and mortality in eclampsia by early termination of pregnancy

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ABSTRACT

Background: Eclampsia is one of the leading causes of maternal mortality in India.

Methods: A prospective observational study was done on 200 pregnant women admitted with antepartum eclampsia in Malda Medical College from 1 April 2017 to 30 October 2019. Group A included patients who delivered through vaginal route within 10 to 12 hrs of eclampsia by stabilisation of patients while Group B included subjects who underwent early caesarean section for uncontrolled convulsions or poor Bishop score. Maternal and perinatal outcomes were compared between the groups. Data was recorded in a pretested performa and was analyzed using appropriate statistical methods with SPSS.

Results: Caesarean section (group B) was done in 130 cases (65%) while vaginal delivery (group A) was done in 65 cases (37.5%). Group A had higher maternal mortality (10.7%) in comparison to group B (4.6%) which was statistically not significant ($p=0.1075$). There were 32 neonatal deaths (24.6%) and 11 still births (8.46%) in group A while there were 12 neonatal deaths (18.46%) and 3 still births (4.61%) in group B. There was a statistically significant difference ($p<0.0001$) between the groups with respect to total perinatal deaths.

Conclusions: Antenatal and intranatal eclampsia should be managed by early termination of pregnancy preferably with Caesarean section. Early presentation and timely decision to terminate pregnancy will improve the maternal and perinatal outcome.

Keywords: Antepartum, Eclampsia, Hypertensive disorders of pregnancy, Early termination, Caesarean section, Vaginal delivery, Maternal mortality, Perinatal mortality

INTRODUCTION

Eclampsia is a life threatening emergency. Eclampsia is defined as occurrence of convulsions in association with pre-eclampsia. Preeclampsia and eclampsia are major causes of maternal and perinatal morbidity and mortality. Eclampsia is one of the most common causes of maternal mortality in developing countries.^{1,2} Early termination of pregnancy remains the definitive treatment for improving the maternal and perinatal complications in Eclampsia.³ Around 10% of pregnant women are affected by

hypertensive disorders of pregnancy globally comprising of pre-eclampsia and eclampsia, gestational hypertension and chronic hypertension.^{4,5} In India, the incidence of eclampsia ranges from 0.179 to 5%, the average being 1.5%.⁶ It is higher compared to developed countries. The incidence of eclampsia in India was also found to be around 1.56% in the literature.⁷ Good antenatal care can prevent the occurrence of eclampsia. Goals of the treatment of eclampsia are to stop and prevent convulsion to control elevated blood pressure and prompt delivery of the baby. Convulsions are prevented and treated by

judicious administration of Magnesium sulphate.⁸ Prompt obstetrical management along with medical management is essential for better maternal and perinatal outcome. However, there are no clear records estimating the exact incidence and mortalities associated with eclampsia managed by early and quick termination of pregnancy in India. The present study was carried out to determine the maternal and perinatal outcome in terms of mortality in antenatal mothers presenting with eclampsia to a tertiary care hospital and managed by early and quick termination of pregnancy.

METHODS

A prospective observational study was done on 200 pregnant women admitted with antepartum eclampsia in Malda medical college from 1 April 2017 to 30 October 2019. From the previous years, it was established that the sampling frame would include around 200 cases during the study period. Hence, the entire sampling frame was taken as the study population. Convenient sampling was used. All the pregnant women presenting with eclampsia irrespective of the booking status were included in the study. All the pregnant women presenting with eclampsia with a gestational age of less than 28 weeks were excluded from the study. They were divided into two groups based on whether they underwent caesarean section or vaginal delivery. Group A included patients who delivered through vaginal route within 10 to 12 hours of eclampsia by stabilisation of patients while group B included subjects who underwent early Caesarean section for uncontrolled convulsions or poor Bishop score. After getting informed consent and ethical approval, the patients were recruited into the study. The patients were closely monitored and treated during stay in the hospital. Maternal and perinatal outcomes were compared between the groups. Data was recorded in a pretested proforma and then entered in microsoft excel and analysis was carried out with IBM SPSS version 22. $p < 0.05$ was considered statistically significant. Maternal and Perinatal mortality were the primary outcome variables. The explanatory variables included mode of delivery and time taken for termination of pregnancy.

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables with their 95% CI. Independent sample t-test, test of significance for difference between 2 proportions, ANOVA, paired t-test was used to assess statistical significance for quantitative variables depending on the type of data while Chi square test was used to assess statistical significance for categorical variables.

RESULTS

A total of 200 subjects were included in the study. Caesarean section was done in majority of the cases (65%). 32.5% underwent vaginal delivery while 2.5% died before delivering the baby. Maternal mortality was higher in those undergoing vaginal delivery (10.7%) in comparison to the caesarean section group (4.6%) as shown in (Table 1). There was no significant difference between vaginal delivery group and caesarean section group with respect to proportion of maternal deaths ($p=0.1075$).

Table 1: Maternal mortality and mode of delivery.

Mode of delivery (n=200)	N (%)	Number of maternal deaths N (%)	p value
Vaginal delivery	65 (32.5)	7 (10.7)	0.1075
Caesarean section	130 (65)	6 (4.6)	
Undelivered	5 (2.5)	5 (100)	

There were 32 neonatal deaths (24.6%) and 11 still births (8.46%) in group A while there were 12 neonatal deaths (18.46%) and 3 still births (4.61%) in group B as shown in (Table 2). Perinatal mortality was high in vaginal delivery group (66.15%) compared to caesarean section group (11.5%). There was a statistically significant difference ($p < 0.0001$) between the groups with respect to total perinatal deaths as shown in (Table 2).

Table 2: Perinatal mortality and mode of delivery.

Mode of delivery (n=200)	Still birth N (%)	Neonatal death N (%)	Total perinatal deaths N (%)	p value
Vaginal delivery (n=65)	11 (8.46)	32 (24.6)	43 (66.15)	<0.001
Caesarean section (n=130)	3 (4.61)	12 (18.46)	15 (11.5)	

Out of the 65 subjects, who underwent vaginal delivery, majority (53.85%) of them delivered between 4 to 12 hrs of admission. 21.05% delivered within one hour of admission while 24.16% delivered between 1 to 4 hours of admission as shown in (Table 3). Out of the 130 subjects, who underwent caesarean section, majority

(70.76%) of them delivered within 4 hours of admission. 23.07% delivered within one hour of admission while 47.6% delivered between 1 to 4 hours of admission as shown in table 3. Only 29.2% delivered between 4 to 12 hrs of admission. There was a statistically significant difference between the groups in the proportion of

maternal deliveries between 1 to 4 hours of admission (p=0.0016) and 4 to 12 hours of admission (p=0.0008) as shown in (Table 3).

Table 3: Time between admission to delivery.

Characteristics (n=200)	Delivery within 1 hour , N (%)	Delivery between 1-4 hours , N (%)	Delivery between 4-12 hours, N (%)
Group A, Vaginal delivery (n=65)	14 (21.05)	16 (24.16)	35 (53.85)
Group B, Caesarean section (n=130)	30 (23.07)	62 (47.6 %)	38 (29.2)
Difference between caesarean section and vaginal delivery (%)	2.02	23.5	24.65
95% confidence interval of difference (%)	-11.03 to 13.41	9.14 to 35.72	10.05 to 38.23
P value	0.75	0.0016*	0.0008*

DISCUSSION

Eclampsia remains the leading contributor to maternal mortality, particularly in developing countries. It is a major risk factor that determines the outcome of pregnancy. Pregnancy-related hypertensive disorders are a significant cause of adverse maternal and fetal outcomes.⁹ Out of the total 200 subjects, Caesarean section was done in majority of the cases (65%). 32.5% underwent vaginal delivery while 2.5% died before delivering the baby. A similar study done in a tertiary care hospital in Andhra Pradesh from February 2015 to 2016, observed that the vaginal delivery was done in 56% of the cases while 44% required caesarean section.¹⁰ They observed the incidence of eclampsia was 0.58% in the hospital in 8595 deliveries.¹⁰ They concluded that eclampsia alone is not an indication for caesarean section and also observed that mode of delivery had no significant effect on the outcome of the eclamptic.¹⁰ In our study, maternal mortality was higher in those undergoing vaginal delivery (10.7%) in comparison to the caesarean section group (4.6%).

There were 14 perinatal deaths in eclampsia patients, giving a perinatal mortality rate of 280/1000 in the study done by study Shaikh et al.¹⁰ In our study, there were 58 perinatal deaths amounting to 240 deaths per 1000 mothers presenting with eclampsia. Prematurity (n=4) and birth asphyxia (n=6) were the most common causes of early neonatal death in their study. In our study, Perinatal mortality was high in vaginal delivery group (66.1%) while caesarean section group suffered less perinatal losses (11.5%). There was a statistically significant difference (p<0.0001) between the groups with respect to total perinatal deaths in our study. In another study, the perinatal mortality was 132 per 1000.¹¹ In a retrospective hospital based study done in India, total percentage of perinatal deaths due to eclampsia was 14.6% and still birth were 10.6%, 32% of babies have NICU admission.¹² Stillbirth rate was 22.5% in women presenting with eclampsia in another. In the present study, most of the patients underwent caesarean section (70.76%) within 4 hrs of admission, whereas majority of

patients in group B (53.85%) were delivered vaginally after 4 hrs of admission. There was a statistically significant difference between the groups in the proportion of maternal deliveries between 1 to 4 hours of admission (p=0.0016) and 4 to 12 hours of admission (p=0.0008). In the study by Yakasai et al, almost 83.3% presented within 12 hours of the onset of the fits and nearly half (44.9%) had their convulsion before the onset of labor.¹¹ A prospective study conducted at the maternity unit of a tertiary teaching hospital observed the incidence of eclampsia to be 2.8% among 7,558 deliveries.¹⁴ The mortality rate was 19.4% in their study while it was 9% in our study.¹⁴ The duration from admission to delivery did not significantly influence mortality in their study.¹⁴ But they observed vaginal delivery was found to be significantly associated with mortality compared with cesarean section (crude odds ratio=2.55; 95% CI=1.11–5.87; p=0.0272) and arrival at our hospital 12 hours or more after the onset of seizures increased the risk of maternal death about 22-fold.¹⁴ Tukur et al in their study in Nigeria observed that delay in hospital admission was significantly associated with mortality in subjects with eclampsia.¹⁵ Hussain F et al in their study in Dhaka observed that mortality was higher in subjects with eclampsia admitted >5 hours after the onset of seizures.¹⁶ Majority (73.9%) of deaths due to eclampsia occurred within the first 12 hours of admission in a hospital based retrospective study done in a tertiary care centre in rural parts of eastern India.¹⁷ 82% patient delivered within 10 hours of admission in another study.¹²

The decision to perform caesarean section should be based on fetal gestational age, fetal condition and presence of associated obstetric indications (mal presentations or the other high-risk factors), cervical bishop score and maternal condition but not merely by the presence of eclampsia.^{9, 15, 18, 19} As most of patients having caesarean section were delivered within 1 to 4 hours of admission, the fetomaternal outcome was better in them. Therefore, convulsion delivery interval has had a significant impact on maternal and perinatal mortality. Our study reinforces the concept of quick termination of pregnancy by caesarean section in eclampsia particularly if immediate

vaginal delivery is not possible. Medical management of eclampsia should not be ignored along with obstetric intervention in optimum time.¹⁹ The same fact is established in the current study and also in studies conducted in the other countries.

Our study was limited by its small sample size and its sampling method. It was a hospital based sample derived through convenient sampling. So, the findings of our study cannot be generalized. Large scale community based multi-centric studies are the need of the hour for making policy decisions.

CONCLUSION

Eclampsia continues to be an important etiological factor for maternal/perinatal morbidity and mortality. Early presentation and timely decision to terminate pregnancy will improve the maternal and perinatal outcome. In the present study, Caesarean section was done in majority of patients and those patients showed better maternal and perinatal outcome in comparison to those undergoing vaginal delivery. Good antenatal care can prevent the occurrence of eclampsia, though not in all cases. Prompt caesarean section along with medical management of convulsions can have a great impact on fetomaternal outcome in cases of eclampsia.

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