



Original Article

Risk Factors of Eclampsia and Its Maternal Effects at A Tertiary Hospital: A Retrospective Study

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ABSTRACT

Eclampsia is responsible for 34% of maternal mortality in Pakistani tertiary care hospitals among women admitted for delivery. **Objective:** To evaluate risk factors associated with eclampsia patients as well as the perinatal maternal effects in patients. **Methods:** Overall, 250 patients were involved in this research who were diagnosed with eclampsia. The data were collected from the medical records of the patients. The medical records contained information related to the patient's pregnancy history, characteristics, medical history, obstetric history, information related to admission to the hospital, maternal outcomes, and treatment provided at the hospital. For statistical analysis, SPSS version 21.0 was used. **Results:** There were 21689 women who gave birth in the hospital during the research process and 250 patients (1.15%) were diagnosed with eclampsia out of which 4 women died and had a case fatality rate of 1.6%. The major risk factors associated were young age, already existing medical conditions, education level being low, low antenatal attendance, and nulliparity. HELLP syndrome was the most common consequence with a percentage of 15.6. All patients were provided with medication of magnesium sulfate. However, there was an absence of parenteral antihypertensive therapy. A total of 46 women (18.4%) gave birth through vaginal delivery. **Conclusions:** According to our findings, eclampsia is still a key risk to maternal survival. Poor socioeconomic status, lack of education, and inadequate antenatal care were found as major risk factors.

INTRODUCTION

According to a recent systemic review of global mortality, Pakistan has the third-highest rate of maternal, fetal, and child mortality. Eclampsia is responsible for 34% of maternal mortality in Pakistani tertiary care hospitals among women admitted for delivery. According to a local study Pre-eclampsia and eclampsia occurred 5.6% of the time (n=112/2212). Hypertension (28.7%), gestational diabetes (25.9%), anaemia (14.9%), maternal age > 35 years (9.3%), BMI greater than 30 kg/m² (8.1%) and 35 kg/m² (11.7%), nulliparity (6.5%), unbooked status (i.e., lack of

antenatal care; 6.4%), and low education level (5.8%) were among the risk factors for pre-eclampsia and eclampsia [1]. Hypertensive disorders (HD), which affect 5% to 10% of people on average, are the most common medical condition that contributes to problematic pregnancies. They are also a significant contributor to maternal and perinatal mortality and morbidity globally [2, 3]. Eclampsia is a significant life-threatening consequence of hypertensive disorders of pregnancy which is described as the presence of convulsions in conjunction with

preeclampsia [4]. Eclampsia's morbidity and prevalence vary substantially between developed and underdeveloped countries. In Europe, the crude incidence of eclampsia ranges from 0-0.1% while in other countries, it ranges up to 4% [5, 6]. In developed nations, also called high-income nations, the number of deaths or cases of eclampsia fluctuates between 0-17.7% [7]. These figures show how the severity of the issue is influenced by socioeconomic level and the accessibility of medical care. In our society, hypertensive disorders of pregnancy are responsible for 14.9% of maternal mortality [8]. Nevertheless, no clear records are found that estimate the exact mortalities, morbidities and incidence linked with eclampsia. The purpose of this research was to assess the perinatal and maternal effects of eclampsia at a tertiary hospital.

METHODS

Our hospital caters thousands of patients monthly around sixty thousand people were being served by our hospital. This hospital also accepts cases that were referred from other central hospitals. Recent sources estimate that the government has a population of about 400 million people. Annually, 5,000-10,000 deliveries were performed in this hospital. The referral system here was not well managed that's why most of the cases were self-referred. Most of these cases were very complicated and bring difficulty for hospital caregivers. All patients' medical records were obtained for the duration of the research. The medical records contained information related to the patient's pregnancy history, demographics, medical history, obstetric history, information related to admission to the hospital, investigations, perinatal and maternal outcomes, and treatment provided at hospital. Data were entered anonymously into data collection sheets. Those patients who gave birth within the time period of the research were compared by adding their demographics to the data collection sheets. Eclampsia cases that were described as a consistent history of seizures at home, in connection with high blood pressure and proteinuria inside the hospital or on the way to the hospital were included in this research. Cases of encephalopathy, meningitis, epilepsy, diabetic ketoacidosis, fever, hypoglycemia, and toxic drug ingestion were eliminated from this research. For statistical analysis, SPSS version 21.0 was used. Patient characteristics and outcomes were investigated through descriptive analysis. A single logistic regression model was employed to characterize the relationship between the risk factors as independent variables and eclampsia as the outcome. P-value lesser than 0.05 was considered significant. The ethical review committee approved this research. This research was retrospective due to which the content from patients was not taken.

RESULTS

There were 21689 women who gave birth during the time period of the research and 250 patients 1.15% were diagnosed with eclampsia out of which 4 women died and had a case fatality rate of 1.6 percent. Table 1 shows the symptoms and signs of cases which were seen at the time of admission. Out of 250 patients who were diagnosed with eclampsia, there were 100 patients who had seizures after the delivery, 148 had antenatal and 2 had intrapartum. At the time of admission, 36% of patients had mild hypertension (blood pressure less than 110 mmHg), 62% of patients had severe hypertension (blood pressure greater than 110 mmHg), and 2% of patients had a diastolic blood pressure.

Signs and symptoms	Frequency (%)
Seizures	4(15.2%)
Headaches	59(26.1%)
Visual disturbances	24(8.9%)
Labour pain	19(7%)
Proteinuria	250(95%)
Jaundice	11(4.9%)
Vaginal bleeding	4(1.9%)
Oedema	60(19.9%)

Table 1: Symptoms and signs of cases

The beginning and mode of deliveries in the research population are shown in Table 2. A total of 77 cases were of C-sections, 151 cases were of primary C-sections, and assisted birth was used in 22 cases.

Mode of Deliveries	Frequency (%)
Onset of labour	
-Spontaneous	22(7.9%)
-Induced labour	77(29.2%)
-Primary C-section	151(59%)
Mode of Deliveries	
-Vaginal delivery	53(21.5%)
-Instrumental delivery	24(8.5%)
-Intrapartum C-section:	
C-section after spontaneous labour	3(2.6%)
C-section after induced labour	19(7.9%)

Table 2: Onset and mode of deliveries in the research population

Table 3 shows the maternal mortalities and morbidities. There was a total of 4 deaths that occurred of which 2 were because of hemorrhage, 1 was because of postpartum hemorrhage, and 1 was because of HELLP syndrome. It was seen that the death rate was 1.6%.

	No (%)
Placental abruption	5(3.9%)
DIC	18(5.6%)
Postpartum hemorrhage	23(9.9%)
Intracranial hemorrhage	4(0.6%)
HELLP syndrome	40(14.9%)
Acute pulmonary oedema	3(0.7%)

Renal dysfunction	19(7%)
Liver dysfunction	15(10.6%)
Complications of anesthesia	5(2.9%)
Massive blood transfusion	6(3.2%)
Complications of sepsis	8(4%)

Table 3: Maternal mortalities and morbidities

Table 4 shows that the most common age of eclampsia was below the age of 20-years. Similarly, nulliparous women have more chances of eclampsia as compared to nulliparous women. The women having body mass index between 30-35 has more eclampsia along with women whose marriage duration was less than 6 months and pregnancy interval of less than 5 years. Pre-existing hypertension before pregnancy was also associated with more chances of eclampsia in women.

Factors	No. of deliveries	Eclampsia	95% CI	p-value
Age (years)				
Below 20	3730	106	2.04	<0.001
20 to 29	12421	89	Reference	
30 to 34	4107	37	1.30	0.189
Above 34	1431	18	1.68	0.06
Parity				
Multipara	13726	57	Reference	0.001
Nullipara	7963	193	3.60	
Body mass index				
Below 20	1482	25	0.86	0.60
20-25	5012	53	Reference	
25-30	7532	42	0.54	0.001
30-35	6422	75	1.22	0.186
Above 35	1241	55	5.00	<0.001
Marriage duration (months)				
Less than 6	2546	124	3.04	0.01
6 to 12	4220	55	Reference	
More than 12	1196	13	0.77	0.045
Second marriage	223	12	7.59	<0.001
Pregnancies interval (years)				
Less than 5	5912	15	Reference	
5 to 10	1341	17	2.78	<0.001
Above 10	712	25	7.34	<0.001
Education				
None	2377	166	8.22	0.001
Primary	7422	61	2.44	0.001
Secondary	8538	22	Reference	
Tertiary	3351	1	0.27	0.049
Preeclampsia family history				
Sister	174	18	3.08	0.001
Mother	192	18	3.08	0.001
Medical conditions (pre-existing)				
Hypertension	199	54	8.11	0.001
Diabetes mellitus	193	38	5.36	<0.001
Renal disease	45	7	3.01	0.001
Cardiac disease	326	15	1.09	0.897

Factors	No. of deliveries	Eclampsia	95% CI	p-value
Anaemia	1866	79	2.55	0.001
Known thrombophilia	76	12	2.24	<0.001
Preeclampsia	886	34	2.66	0.001
Multiple pregnancy	453	11	1.16	0.045
Care visits				
Zero	1040	72	4.37	0.001
One to three	13622	162	1.28	0.533
Four to eight	5768	14	Reference	
More than eight	1259	2	0.33	0.014

Table 4: Risk factors of eclampsia in study participants

DISCUSSION

In this research, patients with eclampsia were 1.15% which is more than the incidence that was recorded in European nations [9-12]. But this percentage was lesser than the incidence that was recorded in Asian countries [13-16]. This disparity is clearly due to differences in socioeconomic status and antenatal care standards. It was evaluated that maternal age is a major risk factor (<20 years) with 106 patients, which represents 42.2 %. This symbolizes marriage at young age in the study's locality, which is associated with low economic and educational standards and, as a result, low prenatal attendance, which can be a significant confounder. Another risk associated with eclampsia is nulliparity [17-18]. A total of 77.2 % of patients in the current research were nulliparous. A total of 69 % of individuals had a body mass of greater than twenty-five, and 21.9 % had a body mass of greater than thirty-five, indicating that obesity plays a role in the pathogenesis of preeclampsia, mostly through placental vasculopathy and endothelial dysfunction. A preeclampsia family history has been shown to triple the chance of developing preeclampsia [17]. Pre-existing hypertension was detected in fifty-four (22.2%) individuals, diabetes mellitus in thirty-eight (14.9%) cases, renal illness in seven (3.1%) cases, and thrombophilia in twelve (4.6%) cases. This is most likely related to the vasculopathy connected with these illnesses, which plays a significant role in causing preeclampsia. Anemia was found in seventy-nine (32.4%) of the cases, which warrants additional investigation into a possible relationship and the influence of antenatal therapy of anemic individuals on their risk of growing preeclampsia [18, 19]. Perinatal mortality in preeclampsia and eclampsia was found to be 3.26 % in American studies. African studies found rates ranging from 11.39 % in Algeria to 22 % in the Democratic Republic of the Congo. In Tanzania, the perinatal death rate from eclampsia was just 30% [20]. In underdeveloped Asian nations, the perinatal mortality rate in preeclampsia and eclampsia ranges from 1.2 % to 14.94 %. Further in this research, the risk of eclampsia increases with the small time span of marriage

which was found in 65% of patients who get pregnant within six months of marriage. A proper reason is still not found. However, according to Yousefi et al., the duration of exposure to sperm influences the risk of preeclampsia, which could be a plausible description [21]. The risk of preeclampsia increases with every year that passes after the last pregnancy. A total of 34/57 (59.6 %) of the cases had a history of preeclampsia or PIH. These findings are consistent with those of earlier studies on regional distributions [22]. There were 22 patients in which assisted birth was given. 151 patients had primary C-sections while 77 patients had induction of labor. Of the 22 patients who presented in labor, 6 of them had intrapartum C-sections and of the 77 patients who had induction of labor, 22 of them had intrapartum C-sections. This high rate of C-sections could be attributed to a variety of factors, including poor monitoring facilities during vaginal delivery as well as a lack of antihypertensive therapy, which makes doctors concerned about observing individuals with BP not being controlled during vaginal delivery. Insufficient fetal monitoring technology and a lack of fetal scalp sampling at the hospital where the study was carried out are to blame for the low threshold for performing C-sections on laboring patients. Previous research has linked C-sections to an increased risk of difficulties in cases of preeclampsia [23]. More research related to the mode of delivery on perinatal and maternal outcomes in the same area is required.

CONCLUSIONS

According to our findings, eclampsia is still a key risk to both maternal survivals. Poor socioeconomic status, lack of education, and inadequate antenatal care were found as major risk factors. Health policies must be established to improve antenatal care and increase awareness of the necessity of early detection of instances of greater BP during pregnancy in order to avoid consequences. To improve critical case care, health professionals must have the proper knowledge and training. Making parental antihypertensive treatment available, as well as strengthening neonatal services, can help to lower the number of maternal problems.

Conflicts of Interest

The authors declare no conflict of interest.

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