Original Research Article

Fetomaternal outcome in patients with eclampsia: study in a territory care hospital in Bangladesh

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ABSTRACT

Background: Eclampsia, a severe complication of preeclampsia, poses significant risks to both the mother and the fetus. Understanding the specific factors influencing these outcomes in the context of Bangladesh is crucial for improving maternal and neonatal healthcare in the region.
Methods: A retrospective cohort study was conducted at department of gynaecology and obstetrics, Jashore Medical College Hospital, Jashore, Bangladesh reviewing medical records of 155 patients diagnosed with eclampsia over a January 2020 to December 2020. Data on maternal age, gestational age, clinical presentation, management strategies, and fetal outcomes were collected and analyzed.
Results: Preliminary findings suggest that maternal age, gestational age at onset, and timely interventions play crucial roles in determining the fetomaternal outcomes in eclampsia cases. Maternal mortality rates, neonatal morbidity, and mortality rates were assessed in relation to these factors. Additionally, the study investigates the impact of various management approaches, including antihypertensive medications, and magnesium sulfate therapy on these outcomes.
Conclusions: Eclampsia continues to pose significant risks to both mothers and infants in Bangladesh. Inadequate antenatal care appears to contribute to the severity of cases. The high rate of emergency cesarean sections underscores the need for vigilant monitoring of high-risk pregnancies. Efforts to improve antenatal care utilization and implement timely interventions are crucial to mitigate the adverse fetomaternal outcomes associated with eclampsia in this setting. Further prospective studies are warranted to explore preventive strategies and optimize management protocols for better outcomes.

Keywords: Eclampsia, Preeclampsia, Maternal mortality, Neonatal outcomes, Bangladesh, Tertiary care hospital

INTRODUCTION

Eclampsia is a life-threatening hypertensive disorder occurring during pregnancy, characterized by seizures in a woman with preeclampsia. This condition poses a significant risk to both the mother and the fetus, and its impact varies across different regions and healthcare settings.[1] The prevalence of eclampsia in pregnant women varies greatly between six and 100 per 10,000 in impoverished nations, but the incidence in affluent countries is reported to be two to three per 10,000.[2-6] Pre-eclampsia typically occurs before eclampsia, although in 15-20% of cases, eclampsia can also occur without any pre-eclampsia symptoms. Eclampsia must be treated very away in order to prevent it from becoming a permanent side effect of pregnancy-induced hypertension (PIH). However, it might not be assumed that every PIH patient will experience it. Eclampsia is more common as a pregnancy approaches term and up to ten days after delivery. According to reports, 38% of fits happen antepartum, 18% happen intrapartum, and 44% occur postpartum.[7] In the lower end of the reproductive age

range, central obesity, essential hypertension, diabetes mellitus (DM), hypothyroidism, connective tissue disorders, asthma, and migraines are associated with a high risk of developing eclampsia.[8] Epilepsy, intracranial hemorrhage, thrombosis, meningitis, encephalitis, brain tumors, and hyperventilation syndrome are additional disorders that might elicit tonic colonic fits. It is advised to diagnose people who exhibit convulsions during pregnancy, labor, or puberty for the potential presence of eclampsia.[9]

Poor fetal outcomes are mostly related to factors such as iatrogenic preterm, respiratory distress syndrome (RDS), intrauterine asphyxia, intrauterine growth restriction (IUGR), and intrauterine death (IUD). Moreover, IUGR may cause neurological abnormalities in children later in life.[10] Effectively raising public awareness and offering an integrated prenatal care system can go a long way toward preventing eclampsia, a pregnancy-related condition that has already shown positive outcomes in the majority of industrialized and developing nations.[11] Nonetheless, eclampsia continues to be a significant contributor to maternal death and unfavorable neonatal outcomes in our system, where basic health care facilities are inadequate.[12] A prospective descriptive research conducted in the United Kingdom in 1992 discovered that the majority of eclampsia cases occurred within a week of the last antenatal visit and despite receiving acceptable prenatal care, with an incidence of 4.9/10,000 cases.[13] According to a review by Sibai et al., the majority of cases that could have been prevented were caused by medical mistake, neglecting to promptly deliver magnesium sulfate, abrupt, early or late onset eclampsia, and inadequate prenatal care.[14]

Less than 50% of patients in Tanzania were referred from the prenatal clinic, and less than 10% were admitted to the hospital before experiencing their first convulsion.[15] According to a 2011 national research that included 685 health facilities and 112 hospital centers, the incidence of eclampsia in Ethiopia was 120 per 10,000 people.[16] This research aims to assess maternal and fetal outcomes in patients diagnosed with eclampsia and identify factors influencing these outcomes, including maternal age, gestational age, and management strategies. Besides, the impact of various interventions, such as antihypertensive medications and magnesium sulfate therapy, on

Fetomaternal outcomes are evaluated in the context of Bangladesh.

METHODS

A retrospective cohort study conducted at department of gynaecology and obstetrics, Jashore Medical College Hospital, Jashore, Bangladesh. Medical records of total 155 patients reviewed who were diagnosed with eclampsia between January 2020 and December 2020. Data on maternal demographics, gestational age at onset, clinical presentation, management approaches, and fetomaternal outcomes collected and analyzed. The study's inclusion criteria were well-defined, and all cases of Eclampsia that were diagnosed (based on clinical signs and symptoms) after 24 completed weeks of gestation and delivered via caesarean section were included. All patients with multiple pregnancies, babies with birth defects, or Eclamptic patients who experienced any kind of anesthesia-related complication were excluded.

An individual data collector extracted the information from the patient's charts, and the principal investigator verified its accuracy. The amount of time that passed for each patient who was admitted to our hospital between their initial seizure and the resident physician's examination and the time that magnesium sulfate was administered was calculated. Data analysis was done with SPSS 20.0 software. Age, parity, booked/unbooked status, length of pregnancy, high blood pressure, proteinuria, headache, blurriness, epigastric pain, jaundice, body swellings, maternal mortality, pulmonary edema, CVA, DIC, renal failure, deranged LFTs, and length of hospital stay) as well as variables related to the foetal outcome (intrauterine death, premature delivery, birth weight, APGAR score, resuscitation necessary, admission in NNU, asphyxia neonatorum, and early neonatal death) were reported as percentages and frequencies.

RESULTS

The median referral time from the diagnosis of the first convulsion to arrival at our hospital was 5 hours. In addition, the time from first convulsion to loading with magnesium sulfate ranged from 15 min following the seizure to 198.7 hours, with a median of 4.41 hours.

Table 1: Summary of the time variables evaluated in the study.

Parameters	Convulsion to arrival time (min)	Referral to arrival time (min)	Magnesium sulphate time (min)	Arrival to evaluation time (min)
Mean	928	351	921	12
Median	268	179	265	7
Mode	178	89	89	1
Minimum	23	23	15	1
Maximum	2146	12877	11923	238

The mean age of patients was 26.26±4.8 years ranging from <20 to 40 years. The maximum number of patients (50.32%) was between 20-25 years, while (23.22%) were having age of 26-30 years. 13% patients were less than 20 years old and only 6.45% were between 31-40 years.

Table 2: Demographic factors and maternal signs and symptoms.

Parameters	Frequency
Maternal Age (years)	
<20	21
20-25	78
26-30	36
31-40	10
Mean age 26.26±4.8 years	
Parity	
Primi gravidae	102
P2-P4	41
P5-P7	12
Gestational age (weeks)	
24-30	30
31-36	62
37-40	63
Mean gestational age 33.7±4.28	
Physical signs	
Headache	155
Blurring of vision	155
Vomiting	150
Body swellings	135
Clinical signs	
High blood pressure	95
Proteinuria	152
Body edema	150
Unconsciousness	150
Jaundice	11
Epigastric tenderness	7

Main presenting complains in the study group were body swellings & loss of conscious level in 150 (96.77%) patients and 61.29% had blood pressure along with convulsions. Seizures were preceded by headache, blurring of vision in all patients, 96.77% of patients complained of vomiting, with epigastric pain in 4.51%, 7.09% had jaundice and in 152 (98.06%) of the eclamptic patients were found to have proteinuria.

Twenty of these eclamptic mothers (12.9%) died, of these 15 because of pulmonary edema, 2 due to DIC and another 3 had renal failure. 93 patients did not face any complications, however, 42 eclamptic mothers (27%) developed complications like, pulmonary edema, CVA, renal failure, DIC, deranged LFT's and HELLP syndrome. Average hospital stay was 8.4 days±2.60, in which 64 (41.29%) stayed for 5-7 days, 25.16% for 8-10 days and 16.13% for more than 10 days in hospital. As far as fetal outcome is concerned alive born babies were 80.64%, of these 35.48% were term and 45.16% preterm. Nine babies

were of extreme low birth weight (<1 kg) while 21.93% were having very low birth weight (1.0-1.5).

Table 3: Maternal outcome and complications (n=155).

Parameters	Frequency
Maternal outcome	
Maternal mortality	20
Maternal complications	42
No maternal complication	93
Maternal complications	
Acute respiratory distress syndrome/Pulmonary edema	15
Cardiovascular accident	6
Disseminated intravascular coagulation (DIC)	2
Renal failure	3
Deranged liver function tests	13
HELLP Syndrome	3
Duration of hospital stay (days)	
5-7	64
8-10	39
>10	25
Mean hospital stay 8.42±2.60 days	

Table 4: Fetal outcome and complication.

Parameters	Frequency
Fetal outcome	
Fetal alive born (N=125)	
Preterm	70
Term	55
Fetal dead born (N=30)	
Preterm	25
Term	5
APGAR (at birth)	
<4	26
4-7	120
>7	9
Weight of babies (Kg)	
<1.0	9
1.0-1.5	34
1.6-2.4	81
2.5	31
Fetal complications	
Resuscitation	115
Admission In NNU	98
IUGR	20
Asphyxia Neonatorm	80
Early neonatal death	31

52.25% of babies had low birth weight (1.6-2.4 kg) and only 20% had a birth weight of near to 2.5kg. The observed fetal morbidity was also high, as 12.9% babies were IUGR, 74.19% babies required resuscitation at birth and 63.22% neonates were shifted to neonatal intensive care unit. Neonates developed respiratory problem mainly because

of pre-maturity and asphyxia and 20% died within 7 days of their lives in NNU.

DISCUSSION

Given that the case-fatality ratio is among the highest in the world, the high incidence of eclampsia has been documented in other developing nations.[17-19] The higher rates of maternal morbidity and mortality that our patients experienced were caused by inadequate prenatal care, the inability to diagnose gestational hypertension and/or preeclampsia in those patients who received prenatal care, the median time from convulsion to arrival at our center, the delay in administering magnesium sulfate, and the delay in starting appropriate anti-hypertensive medication treatment once severe range blood pressures were identified. More than 50% of patients at district hospitals were referred straight from nearby health centers, which are not considered the hospital's catchment health facilities, despite many patients seeking better care there. This demonstrates the ineffective referral system in place throughout the nation; the majority of patients must travel more than 50 kilometers to get to our hospital, which explains why the median time from referral to arrival is more than two hours. Eclampsia is one of the main issues that might exacerbate and result in other diseases during pregnancy, and hypertension is one of those complications.[20-21] The morbid danger of eclampsia must be prevented by prompt referral and early management. In the current study, 12.9% of eclamptic mothers passed away, and 27% developed complications like pulmonary edema at 35.71%, DIC at 4.76%, renal failure at 7.14%, CVA at 14.28%, and 30.95% of the patients had deranged LFTs, including three cases of HELLP syndrome. The mean duration of hospital stay was 8.4 days±2.60, with 64 patients (41.29%) staying for 5-7 days, 25.16% for 8-10 days, and 16.13% for stays longer than ten days.

Research indicates that prior pregnancies can provide some protection against eclampsia and preeclampsia, albeit this protection is typically limited to a condition known as primigravidity3. According to data gathered for the current study, 65.8% of the women who had eclampsia were primigravidae, indicating that they are especially vulnerable and should thus undergo more regular prenatal screenings. Additionally, the majority of patients in our study (50.32%) were between the ages of 20 and 25, despite the fact that women under the age of 20 are thought to have a three-fold higher risk of eclampsia. Given that the incidence increases toward the end of pregnancy, the current study's findings which revealed that 68.73% of the patients presented during the third trimester underline the need for more careful monitoring of high-risk patients at this time. Early interventions may further lower mortality and morbidity.

Another study that demonstrated an increase in the incidence of eclampsia approaching term 20 corroborated the findings of our investigation. 85-90% of patients with this course of progression have pre-eclampsia, which is a key context in which eclampsia arises. The remaining 10-15% of individuals, however, may present with eclampsia without any pre-eclamptic indicators 21. In our study, 98.06% of patients with proteinuria and 61.29% of patients with eclampsia had elevated blood pressure. The majority of the cases had prodromal symptoms, such as headache, vision disturbance, vomiting, and epigastric discomfort. Following convulsions, patients typically exhibit proteinuric hypertension and altered consciousness22. Prior to the commencement of fits, 97% of the patients in this study had experienced vomiting, and all had headaches and blurred vision. 96.77% of those who appeared had body edema and were not conscious. There is a noteworthy correlation between increased perinatal mortality and morbidity and eclampsia. With preterm, perinatal death is reported at 432.6/1000, and IUGR is still the primary offender and is thought to be the cause of the majority of the difficulties.23. 24. Of all the babies, 61.29% were born prematurely, 74.19% needed resuscitation at birth, 63.22% were admitted to the neonatal care unit, and 61.61% of them suffered from asphyxia neonatorum. Merely 25% of the infants had a normal birth weight, while 75% had low birth weights as a result of intrauterine growth restriction or preterm. Since it was impossible to determine the precise incidence of IUGR, at least 13% of the babies were thought to have it. The reason for this is that it was challenging to determine with precision how many of the patients had IUGR because the majority of them were either asleep or unsure of when they had their last menstrual cycle. They did not have any ultrasound data. Early deliveries lower maternal mortality and morbidity, as is well-established, but they also put the babies at risk for preterm.

CONCLUSION

High rates of maternal and fetal mortality and morbidity appear to be primarily caused by pulmonary edema and preterm, respectively. The findings expressed that lack of knowledge of the population, ignorance about the complicated condition, and poverty led them towards a worse situation. We should be more concerned about antenatal care to give them less complicated experiences who are primarily at risk. The severity of instances appears to be influenced by inadequate prenatal care. The high number of emergency C-sections highlights the importance of closely monitoring pregnancies at high risk.

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