

Section **Gynaecology**

**Original** Article

## A Prospective Observational Study on Maternal and Fetal Outcome in Eclampsia in a Tertiary Care Hospital

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### ABSTRACT

**Background:** To study maternal outcome in eclampsia in relation to respiratory complications, fever, DIC, renal system affection and electrolyte imbalance. (2) To study the fetal outcome in eclampsia in relation to small for gestational age, intrauterine death, neonatal mortality, perinatal mortality and need for NICU admission. **Methods:** It was a cross-sectional prospective study conducted at Department of Obstetrics and Gynaecology at Department of Gynaecology, Adesh Institute of Medical Sciences and Research, Bathinda, Punjab, India. All patients admitted with eclampsia was enrolled for the study as per the criteria given. It was a cross-sectional prospective study conducted on women admitted with eclampsia after the gestational age of 20 weeks and presented with convulsions. The outcome in relation to maternal and neonatal morbidity and mortality was studied on the basis of various complications and defined parameters. **Results:** A total of 50 patients were enrolled in the study. The most common age group of patients who had eclampsia after 20 weeks of gestation belonged to age group of 31-35 years followed by 26-30 years and the least common age group was between 41- 45 years of age. The mean age was found to be 28.23 years. The most common indication of LSCS in patients with eclampsia was fetal distress followed by Unfavourable cervix, failure of induction and contracted pelvis. The most common complications seen in patients with eclampsia included Respiratory complications like aspiration pneumonia, pleural effusion and pulmonary edema. **Conclusions:** Less ANC visits were associated with more threat and complications. Eclampsia was found to be associated with preterm delivery. Increase in convulsion to delivery interval lead to increase severity of complications.

**Key words:** Eclampsia, Convulsion to delivery time, maternal and fetal outcome.

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### INTRODUCTION

Eclampsia is defined as the onset of convulsions in the setting of preeclampsia when any other neurological cause of convulsions has been ruled out.<sup>[1]</sup> The earliest historical documentation of eclampsia comes from Hippocrates, who noted that headaches, seizures and altered consciousness were ominous signs seen in some pregnancies. The term eclampsia first appeared in the Varandaeus treatise on gynaecology.<sup>[1]</sup>

Even centuries before varandaeus coined the term eclampsia

a similar illness was described by Gabelchoverus (in 1596).<sup>[2]</sup> who divided epilepsy into four types one of which included epilepsy resulting from pregnant uterus And since historical time this disease continues to affect approximately 15-70 per 10,000 deliveries in developing countries.<sup>[3]</sup> The incidence is much lower in developed countries.<sup>[4]</sup> The higher incidence of eclampsia and its complications in

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developing world may be attributed to early age at first pregnancy, poorly equipped maternal health care centres and under utilization of available healthcare facilities.<sup>[5]</sup> Eclampsia is one of the major causes of maternal and fetal morbidity and mortality. Various maternal complications in eclampsia are seizures associated complications like status and aspiration pneumonia. Electrolyte imbalance and other more serious complications like disseminated intravascular coagulopathy, renal failure, elevated liver enzymes and HELLP and neurological deficits can also occur and may be life threatening. The common cardiac complications seen in eclampsia may include increased work load, diastolic dysfunction, left.<sup>[6]</sup> ventricular failure and myocardial damage.<sup>[7]</sup> Other complications may include cortical blindness, abruptio placenta and later development of long term metabolic and cardiac complications.<sup>[8]</sup> Serious and untreated cases may result in maternal death.<sup>[9]</sup> In the fetus intrauterine growth retardation, preterm delivery, birth asphyxia and cerebral palsy are commonly associated with eclampsia. Pregnancy related complications associated with eclampsia like status, DIC and abruptio placenta put both mother and fetus at risk. In developing countries non-availability of NICU care compounds the problems of a neonate born to a mother having eclampsia. Need for intensive neonatal care and perinatal mortality is increased.<sup>[10]</sup>

## METHODS

The present study was conducted on 50 pregnant women with more than 20 weeks of gestation and having eclampsia who were admitted in the Department of Obstetrics and Gynaecology, Adesh Institute of Medical Sciences and Research, Bathinda, Punjab, India.

At the time of admission detailed history regarding age, parity, gestational age, history of eclampsia in previous pregnancy, Family history of eclampsia and present complaints were recorded from the patient or relative depending upon the condition of the patient. A detailed physical examination, abdominal and pelvic examinations were done. Investigations like complete haemogram, platelet count, Kidney function tests, SGOT, SGPT, Serum prothrombin time, Bleeding time and clotting time funduscopy, Ultrasound and 24 hours urine for protein were performed in all the patients. Patients were managed as per the department protocol. Magnesium Sulphate was preferred for managing convulsions, alternatively phenytoin was given. Methyldopa or Nifedipine were given to control blood pressure. At the end of the study, the data was compiled and analyzed. Maternal Outcome was studied in terms of respiratory complications, Fever, DIC, Hepatic and renal dysfunction and electrolyte imbalance. Fetal outcome was studied in terms of small for gestational age, intrauterine death, NICU admissions neonatal and perinatal mortality.

## RESULTS

50 pregnant women with gestational age more than 20 weeks have been included in this study. Analysis of age of the

patients revealed that the most common age group to have eclampsia was 31- 35 years n= 23 (46%). 15 (30.23%) patients belonged to age group of more than 26-30 years while 8 (27.91%) patients belonged to age group of 36-40 years and only 4 patients were found in 41-45 years of age group. The mean age was found to be 28.53 years.

The analysis of parity distribution revealed that 26 (51.16%) patient belonged to multipara group and 24 (48.83%) patients belonged to primigravida group.

Out of the studied cases maximum patients (39.20%) had already visited ANC clinic once or twice. 22.25% patients never visited any ANC clinic while 8 (17.60%) and 9 (20.93%) patients had visited ANC clinics 3 and 4 times respectively.

The analysis of gestational age of the patient revealed that n = 20 patients were preterm i.e. less than 37 weeks of gestation while n = 18 patients had gestational age more than 37 weeks. It was important to analyze this data because preterm deliveries are fraught with the risk of respiratory distress and other perinatal complications in newborn and the baby is more likely to need neonatal intensive care facilities if delivered prematurely.

Out of 50 cases of eclampsia admitted and studied, normal delivery could be possible in 22 and LSCS was done in 28 patients. The indications for which LSCS was done was Fetal distress, Unfavourable cervix, failure of induction and contracted pelvis.

Headache was the most common symptom seen in 92% of the patients followed by nausea and vomiting which was seen in 90% patients. Less common symptoms encountered were epigastric pain, anasarca and sudden blindness, which were seen in 32%, 23.25% and 6% patients respectively.

Analysis of neonatal outcome and mode of delivery revealed that out of 22 patients who were delivered by normal vaginal delivery 17 were preterm and 11 were term babies. 9 babies required NICU admissions for various indications like meconium aspiration, birth asphyxia, respiratory distress and for preterm care. Amongst the 28 babies delivered by LSCS 10 were term and 11 were preterm. 10 required NICU admissions for various reasons including preterm care, respiratory distress and for surfactant administration. respiratory complications, Fever, haematuria, acute renal failure, elevated liver enzymes and electrolyte imbalance.

The analysis of fetal outcome in eclampsia revealed that out of the babies born to studied cases 56.76% were small for gestational age. Out of 36 live born babies, 14 newborns had Apgar score of less than 7 and 18 babies had an APGAR score of more than 7. The babies having Apgar score less than 7 required NICU care in 83.33% cases while in babies with APGAR score more than 7 NICU admission was needed in 42.85% cases. Neonatal outcome was dependent upon birth weight of the baby, gestational age, birth asphyxia, presence or absence of meconium aspiration and Apgar score at birth. An Apgar score less than 7 was significantly associated with neonatal mortality (91.66%) while an APGAR score of more than 7 was associated with a lower neonatal mortality rate. Majority of the newborns

with an APGAR score less than 7 needed NICU admissions. Various indications for which they were admitted in Neonatal intensive care units were for prematurity, birth asphyxia, respiratory distress and for surfactant administration.

**Table 1: Mode of delivery and its relation to neonatal morbidity and mortality.**

Date of Delivery	Number	NICU	Term	Preterm
LSCS	28	10	10	11 (52.38%)
Vaginal	22	5	5	17 (77.27%)

**Table 2. Complications associated with eclampsia.**

Complications	Number of Patients
Respiratory symptoms	11
Fever	10
hematuria	10
Acute renal failure	7
Elevated Liver Enzymes	6
Electrolyte Imbalance	5
DIC	3
Abruptio placenta	3
Cardiomyopathy	2
Cerebrovascular accidents	2
HELLP	1

Frequency trends of LBP in both age categories was made and result showed: 27% females had LBP in the  $\leq 30$  year category; and 60% females had LBP in the  $\geq 30$  year category. Hence a total of 87% females were found to have LBP, whereas 13% females did not have LBP; with the limitation that LBP was measured as the self-reported presence of the disorder among respondents, and questionnaire was a generalized one. 28%, 52%, 20% females reported onset age at menarche as 10, 11, and 12 years respectively; non-differential recall bias may have played a role in this information. Out of the total married, 41% females had 3-4 children, 19% had 1-2 children, and 40% had no children. According to respondent's own perception 94% had sedentary life style, and 20% were overweight.

## DISCUSSION

Eclampsia is known to mankind since ancient times. Even centuries before the term "eclampsia" was coined in the Varandaeus treatise on gynaecology, it was recognized as a type of epilepsy associated with pregnancy. It is one of the major causes of maternal and fetal morbidity and mortality.<sup>[11]</sup> Proteinuria and hypertension are cardinal features of pre-eclampsia. The incidence and complications associated with eclampsia is more in developing world

because of early pregnancies and lack of awareness, poverty and insufficient healthcare facilities.<sup>[12]</sup> As the exact aetiology is still unknown the preventive and therapeutic measures are still not very satisfactory. The only effective management available is delivery which, though reduces blood pressure levels significantly may not be feasible if the gestational age is less or if the fetus has still not reached viability or even if the fetus has reached viability but still preterm. In these circumstances, the neonatal outcome may be unsatisfactory. Such neonates are prone to develop respiratory distress secondary to surfactant deficiency, intracranial haemorrhage, bronchopulmonary dysplasia and sepsis.<sup>[13]</sup> Though the exact etiopathogenesis of eclampsia is not known the various factors proposed to be responsible for the occurrence of eclampsia are maternal immunologic intolerance, altered placental implantation, genetic, nutritional, and environmental factors, inflammatory and cardiovascular changes.<sup>[14]</sup> Some authors have described the role of angiogenic factors like vascular endothelial growth factor (VEGF) and placental growth factor (PIGF) in the causation of eclampsia.<sup>[15]</sup> Occurrence of cases of pre-eclampsia within families have been recognised since decades pointing towards a possible genetic cause as one of the underlying factors. Though in some families pre-eclampsia seems to follow the Mendelian inheritance pattern<sup>[16]</sup> many studies have found discordance for pre-eclampsia between monozygotic twins suggesting that irritability caused by maternal genes was low.<sup>[17]</sup> The maternal complications related to preeclampsia usually are severe hypertension, seizures, bleeding diathesis, thrombocytopenia, deranged liver enzymes, HELLP, Acute renal failure, abruptio placenta, cardiomyopathy, diastolic dysfunction of heart and cerebrovascular accidents.<sup>[18]</sup> Severe pre-eclampsia was found to have also been associated with low Apgar scores in newborn babies.<sup>[18]</sup> Babies with low APGAR scores are prone for developing various complications like periventricular leukomalacia leading to germinal matrix haemorrhage, respiratory distress hypoglycemia and hypocalcemia.<sup>[19]</sup> The neonates delivered early to control severe eclampsia may require intensive neonatal care.<sup>[20]</sup> These babies may need long term follow up to detect long term sequel of prematurity and birth asphyxia like cerebral palsy. Many studies have concluded that eclampsia in the mother is associated with increased risk of cerebral palsy in preterm and low birth weight infants.<sup>[21]</sup>

## CONCLUSION

Our study concludes that less ANC visits are associated with more threat of complications and hence more awareness and enabling factors should be created to access antenatal facilities.

Eclampsia leads to preterm delivery, which may be responsible for neonatal morbidity and mortality. More convulsion- delivery interval means more risk of DIC, increased severity of complications of respiratory and renal system and increase morbidity.

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