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Original Research Article

## Prospective study of fetomaternal outcome in eclampsia in a tertiary care hospital

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### ABSTRACT

**Background:** Objective of the study was to evaluate fetomaternal outcome in patients with eclampsia.

**Methods:** This prospective study was conducted in Government Thanjavur Medical College Hospital, Tamilnadu, India over a period of 15 months from January 2015 to March 2016 in all eclampsia cases. Total 146 eclampsia cases were admitted of which 113 were antepartum eclampsia, 4 were intrapartum eclampsia and 29 cases were postpartum eclampsia. In all cases of antepartum eclampsia pregnancy was terminated irrespective of gestational age.

**Results:** This study showed that incidence of eclampsia in our hospital is 0.83%. It is more common in the age group of 20 to 25 years (78.8%) and primigravidae (69.2%). Maximum number of cases had seizures before the onset of labour (77.39%). 53.85% eclamptic cases presented with seizures at  $\geq 37$  completed weeks. Commonest mode of delivery was caesarean section (62.33%). Out of 146 patients, 9 (6.16%) cases died, 35 (23.97%) had complications. 75.64% cases delivered live babies but 26.36% had early neonatal death.

**Conclusions:** Eclampsia is still one of the important and common obstetric emergencies, which has a significant role in maternal and perinatal outcome. Regular Antenatal Care (ANC), proper health education, improvements of socio-economic conditions and spreading of awareness in the community has major roles in prevention of eclampsia. Timely and appropriate intervention including primary management, early referral and judicious termination of pregnancy help in reducing morbidity and mortality of both mother and fetus.

**Keywords:** Eclampsia, Fetomaternal outcome, Magnesium sulphate

### INTRODUCTION

Eclampsia is defined as the development of seizures that cannot be attributed to other causes and /or unexplained coma during pregnancy or puerperium in a woman with pre-eclampsia.<sup>1</sup> Eclampsia is most common in the third trimester and becomes increasingly more frequent as term approaches.<sup>1</sup> Approximately 1 in 2000 deliveries is complicated by eclampsia in developed countries, whereas the incidence in developing countries varies from 1 in 100 to 1 in 1700 cases.<sup>2</sup> Maternal mortality in eclampsia is very high in India and varies from 2-30 %, much more in rural hospital based than in the urban counterpart.<sup>3</sup> The perinatal mortality is very high to the

extent of about 30-50%.<sup>3</sup> Eclampsia is the third commonest causes of maternal mortality, after hemorrhage and infection in the developing countries.<sup>4</sup> Mostly eclampsia is preceded by pre-eclampsia but in 15-20% of the cases it may arise without any symptoms of pre-eclampsia too. It is recommended to make a diagnosis of eclampsia for possible existence, in patients who present with convulsions during pregnancy, labour or puerperium.<sup>4</sup> Some clinical causes of maternal deaths that are followed after eclampsia are cardiopulmonary failure, acute renal failure, cerebrovascular accident (CVA), HELLP syndrome (Haemolysis, Elevated liver enzymes and Low platelets) and premature separation of placenta.<sup>5</sup> Reasons like iatrogenic prematurity, respiratory

distress syndrome (RDS), intrauterine asphyxia, intrauterine growth restriction (IUGR) and intrauterine death (IUD) are mostly attributed for poor fetal outcome. Additionally at later stages of life, IUGR may result in neurodevelopmental defects in children.<sup>6</sup> The only cure for eclampsia is delivery of the baby. According to WHO report 2008, eclampsia accounts for 12% of all maternal deaths in developing countries.<sup>7</sup> The onset of eclamptic convulsions can be antepartum (38-53%), intrapartum (18-36%), or postpartum (11-44%).<sup>8</sup>

The purpose of this study is to evaluate the incidence of eclampsia, maternal and perinatal and morbidity/mortality associated with it.

## METHODS

This prospective study was conducted over a period of 15 months from January 2015 to March 2016 at department of obstetrics and gynaecology of Government Thanjavur medical college hospital, Tamilnadu, India. Total 146 eclampsia cases were included in this study. These cases were evaluated by detailed history, thorough clinical examination and investigations. Pregnancy was terminated in all irrespective of gestational age. All cases were treated with magnesium sulphate (Pritchard regimen). Hypertension was controlled with intravenous/oral labetalol and nifedipine if necessary. Maternal variables analysed were age, parity, booking status, referral, duration of pregnancy, imminent symptoms, blood pressure, maternal morbidities, maternal mortality, mode of delivery and duration of hospital stay. Fetal outcome variables were preterm delivery, live birth, birth weight, dead born and early neonatal death. Investigations such as urine albumin, renal function test, liver function test, prothrombin time, clotting time, peripheral smear and fundus examination were carried out. Patients were followed up from admission upto discharge. Maternal and fetal outcome variables were presented as frequencies and percentages.

### Inclusion criteria

- Patient with antepartum, intrapartum and postpartum convulsions.

### Exclusion criteria

- Patient with convulsions due to causes other than eclampsia.

## RESULTS

Total 146 eclampsia cases were included in the study. Among 146 cases, 113 (77.4%) cases were antepartum eclampsia, 4 (2.7%) were intrapartum eclampsia and 29 (19.9%) cases were postpartum eclampsia. Maximum number of cases 115 (78.8%) were in the age group between 20-25 years, while 22 (15.1%) were having age of < 19 years, 6 (4%) were in the age group between 25-

30 years and 3 (2%) were in the age between 31-40 years. Analysis of their booking status showed 100 (68.49%) cases were unbooked and the remaining 46 (31.51%) cases were booked. 100 (68.49%) cases had no preparation for upcoming event indicating lack of antenatal care indirectly.

In current study, 126 (86%) were referred cases. Most of the cases 101 (69.2%) were primigravidae, 40 (27.4%) had parity in the range of 2-4, while 5 (3.4%) had parity between P<sub>5</sub> and P<sub>6</sub>. It was observed that 44 (37.6%) cases presented at gestational age of 31-36 weeks, while 63 (53.85%) had gestational age of 37-40 weeks. Those who were at 24-30 weeks of gestation constituted 10 (8.55%). Main presenting complaint in the study group was headache (95%). 63 (43.15%) cases had severe hypertension whereas 77(52.74%) cases presented with mild hypertension and 6 (4.11%) had BP <140/90 mmHg.

Nine out of 146 cases were died. 35 (24%) cases developed complications like ARDS in 8 (5.47%), pulmonary oedema in 2 (1.36%), CVA 6 (4.1%), DIVC 1 (0.68%), renal failure 3 (2.05%), abruptio placenta 6 (4.10%), HELLP syndrome 5 (3.42%), ARF with DIVC 1 (0.68%), HELLP with IVH 1 (0.68%) and HELLP syndrome with acute kidney injury 2 (1.36%).

As far as fetal outcome is concerned, alive born babies were 110 (75.64%) and 36 (24.66%) were dead born. The observations regarding birth weight of newborn babies were recorded. 66 (60%) babies had <2.5kg, 33 (30%) had birth weight between 2.5-3kg, 11(10%) had weight >3kg. Perinatal mortality rate was 44.52%. Among live birth 29 babies died. 12 (41.38%) died due to prematurity and septicaemia, 9 (31.03%) babies died due to prematurity and respiratory distress syndrome, 4 (13.8%) died due to birth asphyxia and 4 (13.8%) died due to IUGR/meconium aspiration syndrome.

### Fetomaternal characteristics and outcome

**Table 1: Types of eclampsia.**

Types	No	Percentage
Antepartum eclampsia	113	77.4
Intrapartum eclampsia	4	2.7
Postpartum eclampsia	29	19.9
Total	146	100

**Table 2: Maternal age.**

Maternal age (yrs)	No	Percentage
<20	22	15.1
20-25	115	78.8
25-30	6	4.1
31-40	3	2.0
Total	146	100

**Table 3: Booking status.**

Booking Status	No	Percentage
Unbooked (Irregular ANC)	100	68.49
Booked	46	31.51
Total	146	100

**Table 4: Referral.**

Referral	No	Percentage
Referral	126	86
Direct admission	20	14
Total	146	100

**Table 5: Parity status.**

Parity	No	Percentage
Primigravida	101	69.2
P2-P4	40	27.4
P5-P6	5	3.4
Total	146	100

**Table 6: Gestational age.**

GA (weeks)	No	Percentage
24-30	10	8.55
31-36	44	37.60
37-40	63	53.85
Total (AP eclampsia +IP eclampsia)	117	100

**Table 7: Symptoms.**

Symptoms	No	Percentage
Headache	85	58.20
Headache and vomiting	42	29.07
Headache and epigastric pain	3	2.05
Headache, epigastric pain and vomiting	3	2.05
Headache and blurring of vision	6	4.10
Blurring of vision	1	0.01
Vomiting	2	1.36
Epigastric pain	1	0.01
Oliguria	3	2.05
Total	146	100

**Table 8: Signs.**

Signs	No	Percentage
High blood pressure	134	91.78
Proteinuria	78	53.42
Body Edema	42	28.76
Unconsciousness	16	10.95
Jaundice	4	2.73
Epigastric Tenderness	6	4.10

**Table 9: Systolic blood pressure.**

mmHg	No	Percentage
>160	63	43.15
140-159	77	52.74
<140	6	4.11
Total	146	100

**Table 10: Diastolic blood pressure.**

mmHg	No	Percentage
>110	61	41.78
90-100	79	54.11
<90	6	4.11
Total	146	100

**Table 11: Maternal outcome.**

Maternal outcome	No	Percentage
Maternal mortality	9	
Maternal morbidity	35	23.97
No maternal complication	111	76.03
Total	146	100

**Table 12: Maternal mortality.**

Causes	No
HELLP syndrome with DIVC	3
Intracerebral Haemorrhage	3
HELLP with acute kidney injury	2
Pulmonary oedema	1
Total	9

\*DIVC- Disseminated intravascular coagulation

**Table 13: Maternal morbidity.**

Morbidity	No	Percentage
ARDS	8	5.47
Pulmonary edema	2	1.36
Cerebro Vascular Accident	6	4.10
DIVC	1	0.68
Renal failure	3	2.05
Abruptio placenta	6	4.10
HELLP Syndrome	5	3.42
ARF + DIVC	1	0.68
HELLP + IVH	1	0.68
HELLP + Acute kidney injury	2	1.36
Total	35	23.9

\*ARDS- Adult respiratory distress syndrome

\*ARF- Acute renal failure

\*IVH- Intra ventricular haemorrhage

## DISCUSSION

Hypertension is a leading problem that may complicate and result in additional disorders during pregnancy. One such complication is eclampsia which causes devastating results, though it is preventable. The epidemiological

figures of eclampsia are not consistent worldwide, in fact the incidence of eclampsia varies geographically according to the standard antenatal care facilities provided in that area.

**Table 14: Mode of delivery.**

Mode of delivery	No	Percentage
Natural labour	46	31.51
Instrumental delivery	5	3.42
Spontaneous expulsion	4	2.74
LSCS	90	61.65
Hysterotomy	1	0.68
Total	146	100

\*LSCS- Lower segment caesarean section

**Table 15: Indications for LSCS.**

Indications	No	Percentage
Unfavourable cervix	51	56.67
Failed induction	35	38.87
Cephalo pelvic disproportion	4	4.44
Total	90	100

**Table 16: Fetal outcome.**

Fetal outcome	No	Percentage
Live birth	110	75.64
Dead born	36	24.66
Total	146	100

**Table 17: Distribution according to birth weight.**

Birth weight (Kg)	No of babies	Percentage
<2.5	66	60
2.6-3	33	30
>3	11	10
Total	110	100

**Table 18: Causes of early neonatal mortality.**

Causes	No	Percentage
Prematurity/Septicaemia	12	41.4
Prematurity/Respiratory distress syndrome	9	31
Birth asphyxia	4	13.8
Intrauterine growth restriction/Meconium aspiration syndrome	4	13.8
Total	29	100

In this study, the incidence of eclampsia was 0.83% which is comparable to other developing countries with the incidence of 1 in 100 to 1 in 1700 pregnancies.<sup>9-11</sup> In our study, 113 (77.4%) cases were antepartum eclampsia, 4 (2.7%) were intrapartum eclampsia and 29 (19.9%) cases were postpartum eclampsia which is comparable to

Sigal et al.<sup>12</sup> 78.8% cases belonged to 20-25 years of age as discussed by other studies.<sup>13-16</sup>

Majority of the eclamptic cases 100 (68.49%) were unbooked. Hemkanta et al, Prabhakar et al, Pradeep et al and Chaudhury reported similar results.<sup>17,20</sup> But on the other hand, in 1994 Douglas and Redman reported that women with less frequent antenatal visits were not significantly different from those with standard antenatal care in terms of the type of first seizure, where it occurred, or the gestational age at which it occurred and also that 85% women had been seen by a doctor or midwife in the week before their first convulsion.<sup>14</sup> Choudhury P also reported that out of 47 eclampsia patients 26 (55.31%) had antenatal care.<sup>20</sup> In our study majority of cases 126 (86%) were referred from outside. Only 20 (14%) cases admitted directly.

Majority of the cases 101 (69.2%) were primigravidae, which is comparable to other studies.<sup>13,17,19,21</sup> It indicates that primigravidae are the main victim for eclampsia.

In our study, highest numbers of eclamptic patients were found in the gestational age  $\geq 37$  weeks 63(53.85%) followed by below 37 weeks gestation 44(37.60%). Only 10 (8.55%) eclamptic patients were found in gestational age less than 30 weeks. Similarly, Sunitha et al, Prabhakar et al and Chaudhury also found highest number of eclamptic patients in gestational age  $\geq 37$  weeks. Among 146 cases of eclampsia, 134 cases had high blood pressure, 78 had proteinuria, 42 cases had body oedema.<sup>13,18,20</sup> 16 cases were admitted in unconscious state. 4 cases had jaundice and 6 cases had epigastric tenderness.<sup>63</sup> (43.15%) mothers had severe hypertension whereas 77 (52.74%) mothers presented with mild hypertension, similar to study result of Pradeep M et al and Matter F et al.<sup>19,22</sup>

This disorder is one of the leading causes of maternal mortality worldwide it varies from 1.8-27.5%. Maternal mortality in our study was 6.16%. Almost one third of patients suffer from complications.<sup>23,24</sup> Major complications of eclampsia include placental abruption (7-10%), DIC (7-11%), HELLP syndrome (9.7-20%), acute renal failure (5-9%), pulmonary edema (3-5%), aspiration pneumonia (2-3%), cerebral haemorrhage and cardiopulmonary arrest (2-5%).<sup>25</sup> 23.97% of cases suffered from complications in our study.

The definitive treatment of eclampsia is delivery, irrespective of gestational age. Therefore, the patient must be delivered within 24 hours in case of severe pre-eclampsia, and within 12 hours in a patient with eclampsia.<sup>1</sup> Lower segment caesarean section was the commonest mode of delivery in our study 91 (62.33%). Similar observation was found in studies by Choudhury and Manjusha et al.<sup>20,26</sup> The percentage of live birth and stillbirth in our study was 75.64% and 24.66% respectively. Significant association of Eclampsia is reported with high perinatal mortality and morbidity.



Perinatal mortality is published around 432.6/1000 with prematurity where IUGR remains the main culprit and is considered to be responsible for most of the complications.<sup>27,28</sup> Perinatal mortality was 65 (44.52%) in current study, which was contributed by 36 (24.66%) of stillbirths and 29 (26.36%) of early neonatal deaths. Prematurity and Septicaemia was the major cause (41.4%) for early neonatal death. As this is an established fact that early deliveries reduce maternal mortality and morbidity however expose the babies to the risks of prematurity.

## CONCLUSION

This study reveals that eclampsia is still an important obstetric emergency in the community contributing to significant maternal and perinatal morbidity and mortality. Certainly the high incidence of eclampsia can be reduced by proper antenatal care, diagnosing, admitting and treating the mild and severe pre-eclamptic cases. However, eclampsia can occur bypassing the pre-eclamptic state and as such, it is not always a preventable condition. Antenatal care, early diagnosis, primary management and referrals need to be improved.

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