

## Clinical study of eclampsia patients at DR.V M. Government medical collage Solapur, India

Dr Prabhakar gawandi<sup>1</sup>, Dr Mrs. M A Shinde<sup>2</sup>, Dr C A Jadhav<sup>3</sup>

Assistant Professor Department Of Obgy Dr V M G M C Solapur India<sup>1</sup>

Professor And Head Of Department Of Obgy Dr V M G M C Solapur India<sup>2</sup>

Assistant Professor Department Of Obgy Dr V M G M C Solapur India<sup>3</sup>

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**Abstract:** Aims and objectives 1) To study the incidence of eclampsia at Dr V.M.Govt.Medical collage Solapur. 2) To study the clinical profile, maternal and perinatal outcome in eclamptic patients. Method Analysis of case records of all eclampsia cases from the study period of November 2010 to October 2012, a retrospective study. Results The incidence of eclampsia was found to be 1.09% in our hospital The number of maternal deaths of eclampsia patients was 5 out of 182 eclampsia cases. The maternal mortality in eclampsia cases was 2.74% and the perinatal mortality rate in eclampsia 295.7 per 1000 total births. Majority of the patients were unbooked, 75.27 % of patients were primigravidas and 90.10 % of patients were less than 25 years of age. Antepartum eclampsia was seen in 141 patients (77.47%) intrapartum eclampsia in 17 patients (9.34%) and postpartum eclampsia in 24 patients (13.19%). There were 3 cases of intercurrent eclampsia. 54.15% of eclampsia patients delivered vaginally and 45.85% underwent caesarean section for various obstetric indications. 1 patient died undelivered.

**Key words:** Eclampsia, maternal mortality, perinatal mortality rate.

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### I. Introduction

Eclampsia is an obstetric enigma. Eclampsia as a clinical entity has been known from times immemorial. Even today it is one of the dreaded obstetric complications. Eclampsia remains as one of the unsolved problems in obstetrics. Today also eclampsia is a life threatening emergency that continues to be a major cause of serious maternal morbidity and is still the leading cause of maternal mortality. It has been estimated that approximately 50,000 women die each year worldwide from this dreadful disease (Duley, 1992)<sup>1</sup>. A maternal mortality of 3 to 4 % and perinatal mortality of 30 to 40 % may occur following eclamptic convulsions ( Davey, 1995)<sup>2</sup>. According to the WHO report 2005, eclampsia still accounts for 12% of the maternal deaths throughout the world<sup>3</sup>. In the developed countries with good prenatal care facilities and better facilities for care of preterm and low birth weight babies, very low fetomaternal morbidities and mortalities are reported. But in the developing countries, eclampsia is the third most common cause of maternal mortality, after hemorrhage and infection.

In India, the maternal and perinatal morbidity and mortality due to eclampsia is very high<sup>4,5,6,7</sup>. The figure of maternal mortality due to eclampsia ranges from 8 to 14%<sup>7</sup>. A low maternal mortality of 2.2% was reported by Menon<sup>4</sup>. The perinatal mortality ranges from 14.6% to 47.4%, because eclampsia still kills.<sup>5</sup> Admission of eclamptic mothers at any Government Medical college hospital in India is still a common event and maternal and perinatal morbidity and mortality are also high. The maternal and perinatal outcome following eclampsia primarily depends on the nature of convulsions, quality of treatment received and the speed with which it is available. But various epidemiological aspects of pregnant women are strong determinants of the occurrence of this disease and maternal and perinatal outcome.

The present study is undertaken to analyze the cases of eclampsia and know the maternal and perinatal morbidity and mortality. Our hospital has large number of patients referred from urban health centers, primary health centers, rural hospitals, sub district hospitals and also from private hospitals. The attempt is done to assess the problem of eclampsia in our community, to study the various risk factors and its course and its effects on maternal and perinatal morbidity and mortality. So it is worthwhile to review this major problem of eclampsia in obstetrics periodically

### II. Materials and Methods

This study was carried out in our hospital in an urban setting, which acts as a referral centre for both rural and urban population. All patients of eclampsia presenting during the study period were included in the study. A total number of 182 cases of eclampsia admitted to the hospital from November 2010 to October 2012 were included in this study after obtaining clearance from Hospital Ethical Committee. All patients were followed from admission to their discharge.

## **2.1 Inclusion Criteria**

- Patient with antepartum convulsions
- Patient with intrapartum convulsions
- Patient with postpartum convulsions

## **2.2 Exclusion criteria**

- Patient with convulsions due to causes other than eclampsia On admission detailed history was taken from the patient or her relative accompanying her and detail clinical examination was done. If patient was referred from outside, the details of treatment given there were also noted and treatment modified accordingly.

## **2.3 Interventions**

Primary evaluation At the time of admission all patients were evaluated as per a standard protocol (reproduced below).The following investigations were done at the time of admission and repeated later as and when necessary-

Haemoglobin

WBC count, total and differential

Platelet count

Peripheral blood smear

Prothrombin time and aPTT

Serum Bilirubine and liver enzymes

Blood Urea level and Serum Creatinine level

Serum Sodium and Potassium levels

Blood sugar level

Urine for Albumin and sugar and microscopy

Fundoscopy

In addition Non Stress test, Intrapartum fetal monitoring, abdominal as well as obstetric Ultrasonography, C.T. Scan, MRI were done in certain patients as per individual needs.

## **2.4 General Measures**

- a. All patients were admitted in a special isolated room equipped with a railed cot and facilities for suction, cardio pulmonary resuscitation, oxygen and electronic foetal monitoring
- b. Gentle nursing care including periodic oropharyngeal suction, maintenance of airway, nasal oxygen and strict antiseptics were provided.
- c. Continuous monitoring of various parameters including pulse, blood pressure, and respiratory rate, level of consciousness, urine output & albumin and signs of development of other complications was carried out in addition to routine obstetric monitoring.
- d. Blood and blood products like fresh frozen plasma, platelets were given to patients with coagulation abnormalities.

## **2.5 Medical management:**

The agents used for treatment can be divided into-

- a. Anticonvulsants
- b. Antihypertensive

a. Anticonvulsants: To prevent further convulsions in a patient of eclampsia  $MgSO_4$  therapy was used. Those patients who haven't received  $MgSO_4$  at the referring centre, it was given by Pritchard's regimen – Loading Dose as 4 gm of 50%  $MgSO_4$  diluted upto 10 ml slowly intravenous over 10 minutes and 5 gm of 50 %  $MgSO_4$  deep intramuscular on each buttock. Maintenance Dose as 5 gm of 50 %  $MgSO_4$  intramuscular on alternate buttocks every 4 hourly and it was continued for 24 hours after delivery or after the last convulsion whichever is later. The toxicity signs of  $MgSO_4$  were carefully monitored; like absence of patellar reflex, decreased respiratory rate (less than 14/min), decrease in the urine output 30 ml/hr. If any signs of toxicity were found,  $MgSO_4$  infusion was stopped and antidote injection i.e., 10 ml 10% calcium gluconate solution slows IV was given. Those patients who had received Loading dose of  $MgSO_4$  according to the referral letter, further maintenance doses were continued after due notification in the history proforma. Others who were given inadequate doses of magnesium sulphate were shifted to standard Pritchard's regime.

b. Antihypertensive: Cap. Nifedipine 10 mg stat if Diastolic BP more than 110 on admission and followed by 10 mg 8 hourly was given. In some patients, either with altered consciousness or with tachycardia

Labetolol was also used as an antihypertensive agent either orally or by intravenous route. The dose of Inj Labetolol was 20 mg diluted to 20 cc and given intravenous slowly at rate of 1cc per minute. And repeated after half hour if diastolic blood pressure does not come to < 110 mm of Hg. The oral dose was tab labetalol 100 mg 12 hourly.

## 2.6 Obstetric management

Every patient was evaluated at the time of admission and a suitable course of management was adopted. Factors taken into consideration were:

- General condition of the mother
- Condition of the fetus
- Presence of signs of fetal jeopardy
- Past obstetric history of the patient
- Any obstetric contraindication for vaginal delivery or for induction of labour

The mode of delivery was decided by the obstetric factors governing the individual patient during labour. Those patients who were not in labour at the time of admission and with no contraindication for induction of labour were induced with Prostaglandin E2 or by intracervical Foley's catheter insertion or extra amniotic instillation of Ethacridine lactate. Active management of labour was done in all the cases. Sweeping of membranes, amniotomy and augmentation with oxytocin were the techniques employed. Caesarean section was performed in many of the patient for various obstetric indications. The patients were kept under close observation in obstetrical intensive care unit for varying periods till their condition stabilised after delivery. This was usually till about 24 hours post partum after which they were further followed up in wards till discharge. The babies who got shifted to NICU were also followed up there till their discharge.

## III. Results

During the period of two years from November 2010 to October 2012, total 16,622 deliveries were conducted at the institute. During this study period there were 182 eclampsia cases. The incidence of eclampsia is 1.09% of the total deliveries in hospital during the study period. Maximum i. e. 164 out of 182 (90.10%) of total eclampsia patients were in the age group 16 to 25 years. The maximum number of eclampsia cases was primigravida, total 137 cases i.e. 75.27%. In this study, 79.67% i. e. 145 patients of eclampsia did not have any antenatal care or received inadequate care with less than three antenatal visits. 56% i. e. 102 eclampsia patients were residing in rural area. While 43.96% of eclampsia patients were from urban area. The socio economic status was decided according to the B.G. Prasad classification, maximum i.e. approximately 76.48%, (139) eclampsia patients belonged to the lower socio economic status.

**Table 1** Distribution of eclampsia patients according to antenatal care

	No. of cases	Percentage
Antenatal care received	37	20.33
Antenatal care not received	145	79.67
Total	182	100

Maximum patients did not received any antenatal care

**Table 2** Distribution of patients according to type of eclampsia

Type of eclampsia	No of cases	Percentage
Antepartum	141	77.47
Intrapartum	17	9.34
postpartum	24	13.19
Total	182	100

Most of patients develop convulsion before on set of labour .There were 3 cases of intercurrent eclampsia.

**Table 3** Gestational age of the patients of eclampsia in weeks at the time of onset of eclamptic convulsions.

Gestational age (weeks)	No. of cases	Percentage
≤ 28	23	12.63
29-32	28	15.38
33-36	38	20.87
≥ 37	93	51.12
Total	182	100

**Table 4** Distribution of eclampsia patients according to Pre-monitory symptoms:

Pre-monitory symptoms	No. of cases	Percentage
Present	146	80.22
Absent	36	19.78
Total	182	100

**Table 5** Distribution of eclampsia patients according to Blood pressure on admission:

B.P. on admission (mm of Hg)	No. of cases	Percentage
≤ 140/90	27	14.84
140/90 - 160/110	77	42.30
≥ 160/110	78	42.86
Total	182	100

**Table 6:** Distribution of eclampsia patients according to protienuria on admission:

Urine Albumin	No. of cases	Percentage
Nil	4	2.19
< 2+	38	20.89
≥ 2+	140	76.92
Total	182	100

**Table 7** Mode of Delivery in eclampsia patients:

Mode of delivery	No. of cases	Percentage
Vaginal	98	54.15
LSCS	83	45.85
Total	181*	100

\* 1 patient died undelivered

**Table 8:** Mode of delivery and maternal outcome

Mode of delivery	no	Alive	dead
Vaginal	98	96	2
LSCS	83	81	2
undelivered	1		1

**Table 9** Perinatal outcome in eclampsia patients

Total number of deliveries	181	
Total number of twin deliveries	5	
Total births	186	100%
Total live births	153	82.25%
Total still births	33	17.76%
Total neonatal deaths	22	29.56%
Total premature deliveries (< 37 weeks)	93 (85+4 sets of twins )	50%

**Table 10 :** Perinatal mortality among the babies delivered to eclampsia patients:

Total births	186
Total no. of still births	33
Total no. of neonatal deaths	22
Total no. of Perinatal Deaths	55
Perinatal mortality rate of eclampsia patients	295.7 per 1000 total births in eclampsia patients

**Table 11:** Perinatal Mortality Rate:

	In eclampsia patients	In the hospital during study period
Perinatal deaths	55	1049
Total births	186	16622
Perinatal mortality rate (per 1000 total birth)	295.7	63.1

**Table 12** Number of convulsions before the start of anticonvulsant treatment & maternal outcome

No of convulsion	no	alive	dead
1-2	78	78	
2-5	98	97	1
>5	6	03	3
coma			1

There were maternal deaths in the group of patients who had > 5 convulsions and who presented in comatose state.

**Table 13** Onset of Convulsion to delivery interval (in hours) in antepartum and intrapartum eclampsia patients and maternal out come

Convulsion to delivery interval	No. of cases	Live	Dead
≤ 5	70	70	
6-12	58	57	1
13-24	44	41	3
>24	10	9	1
Total	182		

**Table 13 :** Mode of delivery & maternal & fetal outcome

Mode of deliver	no	Maternal		Fetal	
		Alive	dead	Alive	dead
Vaginal	98	96	2	68	30
LSCS	83	81	2	58	25
Undelivered	01		1		

**Table 14:** Maternal complications in eclampsia patients

Complication	No. of Cases	Percentage
Aspiration Pneumonitis	18	9.89
Pulmonary edema	12	6.59
Disseminated Intravascular Coagulation	9	4.94
Postpartum hemorrhage	7	3.85
MgSO <sub>4</sub> injection abscess	5	2.75
HELLP Syndrome	2	1.10
Acute Renal Failure	2	1.10
Abruptio Placentae	2	1.10
Retinal Detachment	1	0.55

**Table 15:** Distribution of eclampsia patients who required high dependency unit (HDU) care :

HDU care	No. of cases	Percentage
Required	36	19.78
Not Required	146	80.22
Total	182	100

Total 36 eclampsia patients, 19.78% of all required to be managed in High Dependency Care Unit which has ventilatory facilities, while other were managed at low dependency care unit with facilities for monitoring pulse rate, reparatory rate, blood pressure and oxygen saturation of blood.

**Table 16:** Maternal Mortality rate of eclampsia patients. The Number of maternal deaths of eclampsia patients was 5 out of 182 eclampsia cases . So maternal mortality rate in eclampsia patients: 3268 per 100000 live births

	Eclampsia patients	Total deliveries (two year study period)
Maternal mortality rate (per 100000 live births )	3268 per 100000 live births in eclampsia patients	413 per 100000 live births

**Table 17:** Causes of maternal mortality in eclampsia patients in this study

Cause	Number of patients	Percentage
Acute pulmonary edema	3	60%
DIC leading to hypovolemic shock and multi organ failure	1	20%
Status eclampticus with HELLP syndrome with DIC and acute renal failure	1	20%
Total	5	100%

#### IV. Discussions

In this study incidence of eclampsia was 1.09%. The higher incidence in our study is because of the high referral rate and poor antenatal coverage in rural areas draining into our hospital and also due to negligence of patients of pre-eclampsia who do not get admitted for management of PIH or for induction of labour as advised during their ANC visits. The incidence of eclampsia is much higher than that of developed countries like the United Kingdom(UK),where eclampsia complicates 0.05 % of total deliveries<sup>8</sup> The incidence of eclampsia in Eastern India as quoted by Singh et al is 3.2% which is higher than ours. <sup>9</sup>

The maximum number of eclampsia cases was primigravida, total 137 cases i.e. 75.27%. In this study, 79.67% i. e. 145 patients of eclampsia did not have any antenatal care or received inadequate care with less than three antenatal visits. Eclampsia was more commonly seen in young pregnant women (75.27%) and primigravida (72.27%) which is similar to a study done by Acharya G et al (71.42%). <sup>10</sup>In the present study majority of the women did not receive any antenatal care received proper and adequate antenatal care. In this

study, 79.67% i. e. 145 patients of eclampsia did not have any antenatal care or received inadequate care with less than three antenatal visits. Lack of antenatal care is one of the important risk factors for the development of eclampsia which is proved by many studies. 93.99% of patients had no ANC as per S.Jain et al and 76.66% had no ANC as per S.Swain et al. <sup>11</sup> Out of 182 eclampsia patients, 83 patients directly came to our institute. Among those 99 eclampsia patients referred from government centres or private hospitals. 50 patients i.e. 50.50% did not receive any anticonvulsant, 35.36% received adequate anticonvulsant treatment in the form of loading dose of Pritchard's regime at the time of referral and 14 (14.14%) received inadequate dose of Inj. MgSO<sub>4</sub> at the time of referral.

Antepartum Eclampsia constituted the major bulk of total eclampsia cases i.e. 141 cases constituting 77.47% of the total eclampsia cases. . There were 3 cases of intercurrent eclampsia. Out of these, 1<sup>st</sup> patient had convulsion at 35 weeks of gestation, came after 13 days for ANC check up. Then patient was admitted and induction was done and delivered. 2<sup>nd</sup> intercurrent eclampsia patient had h/o convulsion at 36 weeks of gestation 1 month back, was admitted at second convulsion this time and induction was done and delivered. 3<sup>rd</sup> patient had convulsion at 32 weeks, been admitted in private hospital for antepartum eclampsia but went home against medical advice. Then admitted at our institution after 8 days for recurrent convulsion and LSCS done for failure of induction. 51.12% i.e. 93 eclampsia patients had convulsions at term (at or after 37 weeks of gestation) and 23 patients, 12.63% of all eclampsia cases had convulsions before 28 weeks of pregnancy. Is similar to a study done by Marinakhanum et al ie 53% at term gestation and 43% at near term gestation <sup>12</sup>

146 (80.22%) patients of eclampsia had pre-monitory symptoms like headache, blurring of vision, nausea, vomiting, epigastric pain etc. and 36 (19.78%) of eclampsia patients did not have any of the pre-monitory symptoms. 78 patients of eclampsia (42.86%) had blood pressure  $\geq$  160/110mm of Hg and 77 patients of eclampsia (42.30%) had BP < 160/110 mm of Hg but > 140/90 mm of Hg. 140 cases of eclampsia 76.92% had  $\geq$  2+ proteinuria at the time of admission. 4 patients (2.69%) of eclampsia did not have proteinuria. 67.04% of eclampsia patients had generalized edema on admission. So if they had taken antenatal care for this symptom, eclampsia could have been avoided. 54.15% i.e. 98 patients of eclampsia out of 181 deliveries of eclampsia patients delivered vaginally and 83 patients i.e. 45.85% underwent caesarean section for various obstetric indications. One patient died undelivered. Eclampsia per se is not an indication for cesarean section and mode of delivery had no significant effect on the outcome of the eclamptic as per Ibrahim A et al. <sup>13</sup> The decision to perform cesarean section should be based on fetal gestational age, fetal condition, presence of labour, cervical Bishop score and maternal condition. Labour is usually induced with prostaglandins and early rupture of membranes and the obstetrician can monitor and await vaginal delivery once the patient is stable and convulsions are under control. .Judicious and timely selection of cases for either vaginal delivery or cesarean section is going to improve the maternal and perinatal outcome. The maternal mortality at our hospital in eclampsia cases was 2.74%. Acute pulmonary edema was the most common cause of maternal mortality in eclampsia patients causing death of 3 eclampsia patients (60% of mortality in eclampsia patients). The maternal mortality rate in eclampsia patients was approximately 8 times the maternal mortality rate of the hospital among total deliveries during the study period. The perinatal mortality rate in eclampsia patients comes to 295.7 per 1000 total births in eclampsia patients. While it is 63.1 per 1000 total births for total deliveries in the hospital during the study period. Perinatal mortality rate in eclampsia patients is 4.7 times the perinatal mortality rate in the hospital during the study period

## V. Conclusions

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-eclampsia cases. Antenatal care, early diagnosis, primary management and referrals need to be improved. The medical officers and nurses working at periphery should be trained properly regarding proper and early management of pre- eclampsia and eclampsia. The referral transport services should be improved to cover the large distances in our country in short time.

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