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Research Article

## Eclampsia: maternal and perinatal outcome among tribal population of Bastar, Chhattisgarh, India in a tertiary care centre

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### ABSTRACT

**Background:** Eclampsia is one of the major causes of maternal and perinatal morbidity and mortality in India and other developing countries. This problem is continued in spite of challenging efforts to review each and every pregnant woman with eclampsia and to analyse the factors affecting the outcome. The aim of the research is to study the demographic profile, maternal as well as perinatal outcome of patients with eclampsia and factor affecting it in tertiary care centre of tribal population.

**Methods:** A prospective observational and analytical study was conducted over a period of 1.5 years from 1/12/2013 to 1/06/2015 in the OBGY department of Govt. Medical College and Associated Maharani Hospital, Bastar, Chhattisgarh, India. All the patients of eclampsia or developed eclampsia admitted in the department were included in the study. Data was collected and analyzed included various maternal parameters and foetal parameters and pregnancy outcome.

**Results:** During the study period of 1.5 years, incidence of eclampsia among rural and tribal population of Bastar was 4.76%. Among 250 cases of eclampsia, total 28 maternal deaths were there, showing high case fatality rate of 11.2%. 2 maternal deaths were antenatal. Most common cause of maternal death was postpartum haemorrhage (21.4%) and pulmonary oedema (21.4%). In spite of high case fatality rate, these eclamptic cases developed various complications. One of the factors contributing in poor maternal outcome and developing maternal complication was delay in delivery time from the time of onset of convulsion. Among the cases delivered early (<6 hrs), only 11.4% cases developed some form of complication whereas among the cases delivered after 24 hrs of onset of convulsion, 74.1% cases developed complications. Data of study showed poor perinatal outcome as well. 70% delivery was preterm, 62.4% live birth, 34.4% IUD and 4.4% early neonatal deaths giving 42% of very high perinatal mortality rate. Most common cause of high perinatal mortality and poor perinatal outcome was prematurity (54.5%) and meconium aspiration. Most common mode of delivery was vaginal delivery (82%) which was associated with more perinatal complication (47.3%). In our study most of the cases (60.4%) were of very young age (15-24 years) primi gravid (78.8%) and unbooked /referred (76.8%). Majority of them developed ante partum eclampsia (80.8%) before 37 weeks of gestation (70%).

**Conclusions:** The incidence of eclampsia in our institute was very high with corresponding very high maternal and perinatal morbidity and mortality which emphasizes the need of education, improvement in health care services and universal antenatal checkup and enhancement in timely referral with improvement in transport facilities.

**Keywords:** Eclampsia, Case fatality rate, Perinatal mortality rate

### INTRODUCTION

Eclampsia refers to the onset of convulsions in a woman with pre-eclampsia that cannot be attributed to other

causes. The convulsions may appear before, during or after the labor. It is a serious manifestation that is associated with increased risk of maternal morbidity & mortality along with poor perinatal outcome.

Hypertensive disorders are associated with 2<sup>nd</sup> most common direct obstetric cause of maternal death worldwide.<sup>1</sup> It accounts for 11-14% maternal deaths worldwide most of which occur in developing countries.<sup>1</sup> The incidence of eclampsia varies from place to place as it depends on adequacy of health care to the pregnant women. The incidence is much higher in India and other developing countries ranges from 1 in 100 to 1 in 1700 pregnancies, where as in developed countries it is 1 in 2000 to 1 in 3448 pregnancies.<sup>2-5</sup> Perinatal mortality is reported to be 5%-11% in developed countries where as it is as high as 40 % in developing countries.<sup>6,7</sup> According to recent studies due to ignorance regarding antenatal check-up, lack of transport and lack of early communication with tertiary hospital, play an important role in perinatal morbidity and mortality of eclampsia cases.

The present study is undertaken to evaluate the pregnancy outcome in eclampsia patients and to assess maternal and foetal complications in a tertiary care centre of Bastar, a tribal area.

## METHODS

The present study was done in the Department of Obstetrics and Gynecology of Government Medical College and Associated Maharani Hospital, Jagdalpur, Chhattisgarh over a period of 1.5 years from 1<sup>st</sup> December 2013 to 1<sup>st</sup> June 2015. It was hospital based prospective observational analytical study.

### Inclusion criteria

- All antenatal cases with 28wks or more with h/o convulsions.
- Antepartum, intrapartum and early postpartum cases (<7 days) with h/o convulsions.

### Exclusion criteria

Pregnancy <28 wks and postnatal cases >7days, H/o trauma, seizure disorders, brain tumour, cerebral malaria, meningitis, encephalitis and essential HTN (Renal parenchymal disorder).

Patients fulfilling the inclusion criteria were included by taking detail h/o present pregnancy, thorough clinical examination, h/o previous pregnancy, h/o associated medical or surgical conditions, lab parameters, outcome of pregnancy, mode of delivery, maternal outcome and fetal outcome.

## RESULTS

In our study period of 1.5 years total 5246 cases were admitted in the OBGY department of Maharani Hospital for their delivery. Among those admitted cases 250 patients were of eclampsia cases. Thus the hospital incidence was 4.76%. Demographic variables of the

study showed that eclampsia is most common among unbooked cases(44.8%) of early reproductive age <25 years (60.4%) followed by 25-29 years(31.6%) of primigravida(78.8%) during 33-37 wks of gestation (38%) followed by 28-32 wks of gestation (32%). Commonly convulsions occurred during ante partum period (80.8%) and during labor (18.2%) than during their postpartum period (6%). Most of the eclampsia cases showed high grade of proteinuria i.e. 65.3% cases have 3+ and 26.8% cases have 4+ proteinuria. Most of the eclampsia cases were delivered vaginally (82% normal vaginal delivery) whether by applying forceps (6.4%) or ventouse (4.0%) than caesarean (7.6%).

**Table 1: Demographic data associated with study.**

Age in Years	N(250)	%
15-19	14	5.6
20-24	137	54.8
25-29	79	31.6
30-35	14	5.6
>35	6	2.4
Booked/Unbooked	N(250)	%
Booked	58	23.2
Unbooked	112	44.8
Referred	80	32
Obstetric history	N(250)	%
G1	197	78.8
G2-G3	43	17.2
G4-G5 or >5	10	4.0
Gestational age	N (250)	%
28-32 wks	80	32
33-37 wks	95	38
>37 wks	75	30
Types of eclampsia	N (250)	%
Ante partum	202	80.8
Intra partum	33	13.2
Post-partum	15	6.0
Urine albumin	N(250)	%
1+	7	2.8
2+	10	4.0
3+	163	65.2
4+	67	26.8
Absent	3	1.2

In the present study, eclampsia cases developed various complications e.g. ante partum haemorrhage, postpartum haemorrhage, HELLP Syndrome, DIC, ARF, Retinopathy, CVA, pulmonary oedema, CCF, coma, sepsis, and maternal mortality. Among these complications, ante partum haemorrhage (6.8%), postpartum haemorrhage (8.4%), ARF (13.2%), HELLP syndrome (4.4%), pulmonary oedema (4.4%) and septicaemia (2.8%) were most common cause of maternal morbidity in eclampsia cases. Maternal mortality occurred in 28 cases (n=250 i.e. 11.2%). Case fatality rate was 11.2%. Common causes of maternal mortality were

CVA (17.8%), pulmonary oedema (21.4%), HELLP (14.28%), sepsis (10.7%), ARF (17.8%) and postpartum haemorrhage (10.7%). Most of the maternal complications (74.1%, 23/31) were associated with delay in delivery from onset of convulsion (>24 hrs) whereas comparatively very few complications were seen among eclamptic cases delivered within 6 hrs of onset of convulsion (10.6%, 7/66). Only 4 cases of post-partum eclampsia (4/15) were complicated. Among 28 maternal deaths 2 eclampsia patients died antenatally.

**Table 2: Maternal complications.**

Maternal complication	Cases (n=250)	%
APH(abruptio)	17	6.8
HELLP	11	4.4
DIC	5	2.0
ARF	33	13.2
Retinopathy	14	5.6
CVA	6	2.4
Pulmonary oedema	11	4.4
CCF	4	1.6
PPH	21	8.4
Coma	3	1.2
Sepsis	7	2.8
Mortality	28	11.2
BT	26	10.4

**Table 3: Association of onset of convulsion to delivery interval with maternal outcome.**

Convulsion to delivery interval	No. of patients	Maternal complication	%
< 6 hr	61	7	11.4
6-12 hr	84	21	25.0
12-24 hr	59	29	49.1
>24 hr	31	23	74.1

**Table 4: Maternal mortality.**

Causes	Cases (n=28)	%
CVA	5	17.8
Pulmonary oedema	6	21.4
HELLP	4	14.28
Sepsis	3	10.7
PPH	3	10.7
ARF	5	17.8
MOD	2	7.1
Case fatality rate	28/250	11.2

In the present study, data showed 62.4% live births (156/250), 34.4% IUD (86/250) and 3.2% still birth (8/250). Most of them were preterm (70% i.e.175/250). Out of those live births (156), neonatal deaths were 11(7.0%) mostly because of prematurity (6/11, 54.5%) and meconium aspiration syndrome (3/11, 27.2%). The

perinatal mortality rate of the study was 42%. Although the most common mode of delivery was vaginal delivery (82%) but vaginal route is associated with poor perinatal outcome. Most of the foetus as well as neonates (97/205, 47.3%) developing complications were associated with vaginal delivery whereas only 5.2% (1/19) perinatal complications were associated with caesarean delivery. There were 2 sets of twin delivery.

**Table 5: Perinatal outcome.**

Perinatal outcome	Cases (n=250)	%
Term(>37wks)	75	30
Preterm	175	70
Live Birth	156	62.4
Still Birth	8	3.2
IUD	86	34.4
Neonatal death	11	4.4
Low APGAR(<7)	35	14
IUGR	45	18

**Table 6: Association of mode of delivery with perinatal complications.**

Mode of delivery	Cases (n)	Perinatal complication	
		cases	%
NVD	205	97	47.3
VACCUM	16	3	18.7
FORCEPS	10	3	30
LSCS	19	1	5.2

**Table 7: Causes of neonatal death.**

Causes	Cases (n=11)	%
Preterm	6	54.5
Asphyxia	1	9.0
MAS	3	27.2
IUGR	1	9.0

## DISCUSSION

The present study has shown the incidence of eclampsia in a tertiary care centre of Bastar a tribal area of Chhattisgarh to be 4.76 % which is much higher than North India, New Delhi (3.2/1000 deliveries), Uttar Pradesh (2.2%), Karnataka (2.19/1000 deliveries), West Bengal (3.57%), and Eastern India (3.2%).<sup>8-11</sup> This incidence is higher than other developing countries also.<sup>12-15</sup> The incidence of eclampsia in developed countries is estimated to about 5-7/10,000 deliveries whereas in developing countries varies widely 1 case/100 to 1 case/1700 pregnancies.<sup>5,16,17</sup> Majority of the patients are of primigravida (78.8%) in their early reproductive age <25 years (60.4%) with unsupervised pregnancy ( in their antenatal period and referred cases (76.8%). These data's are comparable to other studies.<sup>8-10,18-20</sup> This indicates the lack of education and awareness regarding antenatal care along with absence of good quality of

health services which is responsible for higher incidence of eclampsia in developing countries than in developed countries. Most probable cause of much higher incidence of eclampsia in our study population is that it is a single tertiary referral centre of large tribal area (around 300km draining area), along with illiteracy and poor access to health care facilities. The incidence in developed countries is much lower due to provision of antenatal care to all pregnant women and better access to health care facilities.<sup>21,22</sup> In our study most of the cases developed ante partum eclampsia (80.8%) before 37 weeks of gestation (70%) similar to other Indian studies and study conducted in Nigeria by Jido TA, whereas in the UK, 44% of eclampsia were postpartum and had lower incidence of ante partum eclampsia which could be due to good ANC surveillance.<sup>8-10,14,19</sup> The present study showed 3+ and 4+ urine albumin by dipstick test in most of the eclamptic patients (65.2% and 26.8%) correlating with poor maternal and perinatal outcome.<sup>12,19,20</sup>

In the present study, most of the eclamptic patients (82%) were delivered by vaginal route similar to other Indian studies due to lack of facilities for intensive care in our institute but in recent years as well as in developed countries caesarean section has been opted for the preferred mode of delivery.<sup>9,10,12,18-20,23</sup>

In our institute, during study period of 1.5 years, 33.6% eclamptic (84/250) cases develop some form of complications e.g. PPH (8.4%), APH (6.8%), ARF (13.2%), Hypertensive retinal changes (5.6%), pulmonary oedema (4.4%), HELLP syndrome (4.4%), DIC (2.0%), Septicaemia (2.8%), prolonged unconsciousness (1.2%) and death (11.2%) similar to study of Pradeep MR et al, Sunita TH et al and the study conducted in Nigeria but case fatality rate (11.2%) is very high in comparison to other Indian studies as well as from developed countries because of being a tribal area there are limited health resources and there is delay in reaching the tertiary care centre as most of the cases (52/84) developing complications having large interval (>12 hrs) from onset of convulsion to delivery which is a significant factor determining the maternal as well as perinatal outcome.<sup>5,8-10,12,18,19,23-25</sup> Most common cause of maternal death in our study is pulmonary oedema (21.4%) because of limited facility of intensive care unit, ventilator as well as large drainage area of poor tribal population. Other deaths are due to HELLP syndrome, ARF, Septicaemia, Cerebral haemorrhage and multiorgan failure.

The present study shows perinatal mortality rate of 420/1000 live births which is very high in comparison to the study of Aparna Khan et al, Sunita TH et, Pannu D et al and from developed countries and comparable with the study of Rajasri G et al and Pradeep MR et al.<sup>8-10,12,19,20,25</sup> Most common cause of high perinatal mortality is prematurity (54.5%) followed by meconium aspiration syndrome (27.2%).<sup>8,13,19</sup> Similar to other studies our study also correlate poor perinatal outcome with vaginal delivery.<sup>19,20</sup> In the developed countries where C-section

is preferred mode of delivery for salvageable babies even if estimated foetal weight is low, have good perinatal outcome.<sup>12,23,26</sup> Our conservative attitude towards vaginal delivery has affected the perinatal outcome badly.

Eclampsia continues to be an important cause of maternal and perinatal morbidity mortality. As the data of present study shows higher incidence, among early reproductive age group of primigravida of tribal population of Bastar than other Indian studies conducted in other regions of the country, with higher perinatal and maternal complications as well as deaths reflects poverty, illiteracy, lack of awareness regarding health services, poor antenatal care and limited health resources. One of the major contributors of poor outcome is delayed referral and delayed presentation with complication to our institute which is in itself a single tertiary care centre draining large population and has lack of intensive care services for mother as well as for neonates. Eclampsia is a preventable challenge which can be dealt by improving the basic health care provided to all pregnant women as well as educating them so that high risk women could be recognized early for timely intervention before landing up into complications.

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