

The Study of Maternal and Perinatal Outcome of Eclampsia in A Tertiary Hospital

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Abstract

Objective: To study the incidence of eclampsia and determine maternal and perinatal outcome associated with eclampsia in a tertiary hospital.

Methods: A retrospective study was conducted in Gandhi hospital, OBG Department, on all eclampsia cases during 1 year period i.e from Jan 2015 – Dec 2015. Different parameters including age, parity, gestational age, booking status, mode of delivery, admission to delivery interval, hospital stay, maternal and perinatal outcome were studied.

Results: Incidence of eclampsia was 1.26% (out of all admissions over 1year period). 60.8% of women were between 21 – 25 years age. 77.45% were primigravida.96.1% of cases were unbooked cases.64.7% of women delivered within 12 hours of admission. 93% of women were discharged healthy with 6.9% of maternal death rate. Maternal complication rate was 38.2% with 24.5% of perinatal death rate.

Conclusion: Eclampsia is associated with higher rates of maternal morbidity and mortality and this still remains a major contributor to maternal mortality and morbidity in developing countries like India.

Keywords: Eclampsia, maternal outcome, perinatal outcome.

I. Introduction

Eclampsia is defined as preeclampsia complicated by generalized tonic-clonic convulsions. Although eclampsia is uncommon in developed countries, it is still a major cause of maternal morbidity and mortality worldwide^{1,2}.The incidence of eclampsia is 0.3 – 0.9% and it has a maternal mortality rate of 0.5% to 10%³. Globally, preeclampsia and eclampsia account for 10-15% of maternal deaths⁴.Most of the over half a million maternal deaths that occur annually are in developing countries like India⁵. Worldwide, eclampsia and preeclampsia account for about 63000 maternal deaths annually⁶. In developing countries case fatality rate of upto 14% is reported to eclampsia compared to 0 – 1.8% in developed countries⁷. Maternal complications of eclampsia include placental abruption, HELLP syndrome, renal failure, DIC, cerebral and visual disturbances, pulmonary edema, cerebral hemorrhage or edema, cardiac failure, ARDS, IUGR, IUD, birth asphyxia and prematurity. Transient neurological deficit is common but persistent deficits are rare. Eclampsia accounts for 67.2% of obstetrics causes of acute renal failure requiring dialysis⁸. Hepatic dysfunction is a result of associated liver parenchymal damage, periportal necrosis and rarely, hepatic rupture⁶. Preeclampsia and eclampsia has been shown to be associated with diastolic dysfunction, increased cardiac work and increased left ventricular indices with evidence of myocardial damage. Cerebro-vascular accidents are common, in the long term cardiac and metabolic disease risks are increased⁹.

In fetus, preterm delivery, asphyxia and IUGR, commonly associated with disease increase the perinatal mortality^{1,5}. Perinatal morbidity and mortality are increased with this disease often as a result of a iatrogenic premature delivery, IUGR or placental accidents such as placental abruption. Hypertensive disease in pregnancy is an important cause for delivery of VLBW babies and delivery at early gestations is associated with high perinatal mortality and morbidity resulting from prematurity¹⁰⁻¹².

II. Aims And Objectives

1. To study the incidence of eclampsia in women attending tertiary care hospital.
2. To evaluate maternal and perinatal mortality and morbidity associated with eclampsia.

III. Materials And Methods

A retrospective study was undertaken reviewing the medical records of all women with eclampsia who were managed at Gandhi Hospital, Department of Obstetrics & Gynaecology during 1 year period i.e from Jan 2015 – Dec 2015. Generalized seizures in preeclampsia ,not attributed to other causes ,were considered to be due to eclampsia. Women with history of seizures prior to pregnancy or before 20 weeks were excluded from study. Patients were hospitalized in Gandhi Hospital, Labour ward. On admission, history was elicited, blood pressure

measurements were done, blood samples were collected for laboratory evaluation, 24 hour urinary albumin excretion and urine culture and sensitivity were done. Maternal complications such as HELLP syndrome, placental abruption, acute renal failure, DIC, cerebral and visual disturbances, pulmonary edema, IUGR and etc., were recorded.

Ante partum management included bed rest, MgSo4 pritchard regimen to control convulsions, airway, breathing and circulation were stabilized. Antihypertensives (Depin or labetalol) was used to control blood pressure. Betamethasone, 2 doses of 12 mg, 24 hours apart was administered intramuscularly to accelerate fetal lung maturity if gestational age was less than 34 weeks. Labour was induced with dinoprostone gel, maximum 3 doses, 6 hours apart.

Data regarding demographic parameters, gestational age, booking status, parity, mode of delivery, maternal and perinatal outcome, admission to delivery interval, length of hospital stay were recorded. The method of delivery was dependent on factors such as gestational age, fetal presentation, presence or absence of obstetric indications, fetal distress and findings on cervical examination.

IV. Results

In this study, 102 cases of eclampsia were studied. Maternal characteristics were summarized. Out of 8072, 102 women were eclamptic, which show incidence of eclampsia during this period was 1.26%.

Table – 1 – Distribution According To Age, Residence, Booking Status

VARIABLE	CATEGORY	NO. OF CASES	PERCENTAGE
Age	≤ 20	36	35.3
	21 – 25	62	60.8
	26 – 30	4	3.9
Residence	Rural	90	88.2
	Urban	12	11.8
Booking Status	Booked	4	3.9
	Unbooked	98	96.1

Most of women were between 21 years and 25 years (60.8%). Majority of women were from rural area (88.221%) and most of the cases were unbooked (96.1%).

Table – 2 – Distribution According To Parity

PARITY	NO. OF CASES	PERCENTAGE
Nullipara	79	77.4
Multipara	23	22.5

Out of 102 cases of eclampsia, 79 cases were nulliparous (77.4%).

Table – 3 – Distribution According To Gestational Age

GESTATIONAL AGE	NO. OF CASES	PERCENTAGE
< 37 weeks	62	60.7
≥ 37 weeks	40	34.3

Out of 102 cases, 62 women were admitted at gestational age less than 37 weeks (60.7%) and 40 women were admitted at gestational age more than and equal to 38 weeks (34.3%).

Table – 4 – Distribution According To Onset Of Eclampsia

ONSET OF ECLAMPSIA	NO. OF CASES	PERCENTAGE
Antepartum	89	87.3
Intrapartum	7	6.9
Postpartum	6	5.8

This table (no.4) shows 87.3% of women had eclampsia during antepartum period.

Table – 5 – Distribution According To Mode Of Delivery

MODE OF DELIVERY	NO. OF CASES	PERCENTAGE
Vaginal	54	52.9
Caesarean	48	47.1

Out of 102 eclamptic women, 52.9% of women delivered vaginally.

Table – 6 – Indications For Caesarean Section

INDICATION FOR C/S	NO. OF C/S (n=48)	PERCENTAGE
Fetal distress	25	52.1
Failed induction	10	20.8
Previous caesarean section	5	10.4
Breech	4	8.3
IUGR	2	4.2
Non progress of labour (secondary arrest of dilatation)	2	4.2

Most common common indication for caesarean section was fetal distress (52.1%)

Table – 7 – Distribution According To Admission To Delivery Interval

ADMISSION – DELIVERY INTERVAL	NO. OF CASES	PERCENTAGE
< 12 hrs	66	64.7
12 – 24 hrs	21	20.5
>24 hrs	11	9.8

64.7% of women delivered within 12hours of admission.

Table – 8 – Distribution According To Maternal Complications

MATERNAL COMPLICATIONS	NO. OF CASES	PERCENTAGE
Placental Abruption	11	10.78
HELLP Syndrome	8	7.84
Acute renal failure	2	1.96
DIC	3	2.94
Cerebro Vascular accident	5	4.9
Pulmonary edema	2	1.96
Aspiration Pneumonia	3	2.94
PRES	2	1.96
Sepsis	1	0.98
PPH	2	1.96

DIC – Disseminated Intravascular Coagulation, PRES – Posterior Reversible Encephalopathy Syndrome, PPH – Post partum Hemorrhage

In this study, 38.23% of cases had complications and most common complication was placental abruption and HELLP syndrome.

Table – 9 – Distribution According To Cause Of Maternal Death

CAUSE OF MATERNAL DEATH	NO. OF CASES (n=7)	PERCENTAGE
Cerebral hemorrhage	4	57.08
Acute Renal Failure	1	14.28
Sepsis with MODS	1	14.28
ARDS	1	14.28

MODS – Multiple Organ Dysfunction Syndrome, ARDS – Acute Respiratory Distress Syndrome
Total number of maternal deaths were 7(6.9%) and most common cause of maternal death was cerebral hemorrhage.

Table – 10 – Information Of Maternal Deaths

Sl.no	Onset of eclampsia	Gestational age (in weeks)	Mode of delivery	Seizure to delivery interval	Delivery to death interval	Seizure to death interval
1	Antepartum	37	Vaginal	6 h	12 h	18 h
2	Antepartum	30	Vaginal	9 h	3 d	3 d 9 h
3	Antepartum	34	Caesarean	4 d	6 h	4 d 6 h
4	Antepartum	34	Caesarean	10 h	4 d	4 d 10 h
5	Antepartum	37	Caesarean	4 h	7 d	7 d 4 h
6	Postpartum	0	Caesarean	-	-	17 h
7	Postpartum	0	Caesarean	-	-	38 h

Most of the deaths occurred in antepartum eclampsia cases after delivery.

Table – 11 – Distribution Of Maternal Death In Relation To Onset Of Eclampsia, Mode Of Delivery, Seizures To Death Interval

VARIABLE		NO. OF CASES (n=7)	PERCENTAGE
Onset of eclampsia	Antepartum	5	71.4
	Postpartum	2	28.6
Mode of delivery	Caesarean	5	71.4
	Vaginal	2	28.6
Seizures to death interval	<48 hours	3	42.9
	2 – 7 days	3	42.9
	>7days	1	14.3

Out of 7 maternal deaths, 5 maternal deaths took place after caesarean section (71.4%).

Table – 12 – Distribution According To Duration Of Hospital Stay

DURATION OF HOSPITAL STAY	NO. OF CASES	PERCENTAGE
< 7 days	47	46.1
7 – 14 days	50	49.01
>14 days	5	4.9

95.1% of women were discharged in less than 14 days of hospital stay and 4.9% of women were discharged after 2 weeks of hospital stay.

Table – 13 – Distribution According To Birth Weight

BIRTH WEIGHT	NO. OF CASES	PERCENTAGE
< 1 kg	8	7.8
1 – 1.5 kg	24	23.5
1.6 – 2.0 kg	24	23.5
>2 kg	46	45.1

Out of 102 cases of eclampsia, 54.8% of babies were born with birth weight less than 2kg.

Table – 14 – Distribution According To Perinatal Outcome

PERINATAL OUTCOME	NO. OF CASES	PERCENTAGE
Live births	87	85.3
Intra uterine deaths	15	14.7
NICU admissions	40 (Discharged Healthy – 30) (Deaths 10)	39.21

Out of 102 cases, 87 women had live births (85.3%) and 15 cases had intrauterine deaths (14.7%). Out of 102 babies, 40 babies were admitted in NICU (39.21%).

Table – 15 – Causes Of Nicu Admissions

	NO. OF CASES	PERCENTAGE
Prematurity	20	50
RDS	10	25
IUGR	6	15
Sepsis	2	5
MgSo4 depression	1	2.5
Miscellaneous	1	2.5

RDS – Respiratory Distress Syndrome, IUGR – Intrauterine Growth Restriction.

60.7% of babies were premature, 39.21% of babies had NICU admissions and 30 (75%) babies were discharged healthy and most common complication associated with NICU admission was prematurity.

Table – 16 – Perinatal Mortality

	NO. OF PERINATAL DEATHS (n=25)	PERCENTAGE
Intrauterine deaths	15	14.7
Neonatal deaths	10	9.8

Total number of perinatal deaths were 25(24.5%) and most common complication which lead to neonatal death was prematurity.

Table – 17 – Causes Of Neonatal Death

	NO. OF NEONATAL DEATHS (n=10)	PERCENTAGE
Prematurity	6	60
Birth asphyxia	3	30
Neonatal sepsis	1	10

V. Discussion

This study consists of analysis of 102 cases of eclampsia, which were managed at tertiary care hospital, Gandhi hospital from Jan 2015 to Dec 2015. Incidence of eclampsia is 1.14% in this study. Incidence of eclampsia is 0.3-0.9% worldwide and incidence in India is 1.5%, Onuh et al¹³ showed incidence of eclampsia as 1.32% in previous report. Majority of women with eclampsia were between age 21-25 years in this study. Previous report by Liu et al showed most of women were between 18-35 years. In Onuh et al study¹³, mean age of women was 27.1 ± 5.6 years. In Sharara et al study, 54.2% of eclamptic women were 25 years old and 18.5% were teenagers.

In the present study, 96.1% of women were unbooked cases having < 3 antenatal visits. El nafaty reported 69.2% of eclamptic women were unbooked In Sharars et al study¹⁴, 30% of women did not have any antenatal visits. In Onuh et al¹³ study eclampsia significantly occurred in unbooked mothers. This shows the importance of antenatal visits and early diagnosis and treatment of preeclampsia and routine prophylactic MgSo4 in cases of severe preeclampsia to prevent eclampsia. Primigravida definitely is at a higher risk to develop antepartum eclampsia. Eclampsia significantly occurred in primi gravida in the study (77.4%), comparable to Onuh et al study¹³ and Conde Agudelo et al study¹⁵. 87.3% of women developed fits in antepartum period in the present study. In Onuh et al study, 86.4% cases were antepartum eclampsia and in Conde-Agudelo et al study¹⁵, 57% of cases developed fits in antepartum period.

In present study, 47.1% cases had caesarean sections and 52.9% women had vaginal delivery. In Sharara et al study¹⁴, 64% of women had caesarean sections. El Nafaty¹⁶ reported lower caesarean section rate. Lee et al¹⁷ reported higher caesarean section rate (79%). 64.7% of women delivered within 12 hours of admission. In present study 38.23% had major maternal complications. Hussein et al¹⁴ reported 33% of major maternal complications and Lee et al¹⁷ reported 32% of cases had maternal complications. In present study, major maternal complications were placental abruption (10.78%), HELLP syndrome (7.84%), Acute renal failure (1.96%), DIC (2.94%), cerebral hemorrhage (2.94%), CVA (1.96%), pulmonary edema (1.96%), aspiration pneumonia (2.94%), PRES (1.96%), sepsis (0.98%) and PPH (1.96%). Shahnaz Nadir Jamil¹⁸ reported 40% of maternal complications in eclampsia with 16% HELLP syndrome, 10% of pulmonary edema, 6% of acute renal failure, 8% of aspiration pneumonia, 2% of neurological deficit, 8% of DIC, 2% of PPH and 2% of CVA. Most common maternal complication was placental abruption and HELLP syndrome in the present study. In present study, maternal deaths were 7 (6.9%) and most common cause of maternal death was cerebral hemorrhage.

In Shahnaz Nadir Jamil¹⁸ study maternal mortality rate of eclampsia was reported as 8% and maternal complications rate was 40%. Bashir et al¹⁹ reported 8.35 to 10.3% of maternal mortality rate of eclampsia. Hashimi²⁰ reported eclamptic mortality as 9% over 5 year period. There were 15 cases of intrauterine deaths, 10 cases of neonatal deaths and total number of perinatal deaths were 25 with perinatal mortality rate as 24.5%. The major cause of perinatal mortality was prematurity and birth asphyxia. Conde Agudelo¹⁵ reported 12.8% perinatal mortality rate of eclampsia.

In the present study, 60.7% of women had preterm deliveries. Conde-Agudelo et al reported 42% of preterm deliveries in eclampsia. 54% of newborns had birth weight < 2kg. Preterm delivery and IUGR was common cause for low birth weight babies. 39.21% of babies were admitted in NICU and most common cause of NICU admission was prematurity

VI. Conclusion

Eclampsia is responsible for considerable maternal and perinatal mortality as well as maternal and perinatal morbidity and this still remained a major contributor to maternal and perinatal mortality and morbidity in a tertiary care hospital. Maternal morbidity include severe bleeding from placental abruption with its resulting DIC, pulmonary edema, aspiration pneumonia, acute renal failure, cerebrovascular hemorrhage and postpartum hemorrhage.

Incidence of eclampsia and maternal deaths are higher in developing countries. This is related to non availability of medical care, lack of education and lack of antenatal care. Measures are to be taken to reduce this problem by education, early screening and provision of antenatal care to all, introduction of comprehensive programmes based upon local epidemiological studies, focusing attention on health education, a network of easily available medical facilities. Retraining of traditional birth attendants to identify the risk factors and early referral to a tertiary care centre is also necessary. Intensive care unit should be

available in every tertiary care centre for mother and baby. Medical staff should be trained for early detection, management and care of these patients.

Perinatal outcome is similar irrespective of mode of delivery. Indication for caesarean section is only obstetric and eclampsia per se should not be considered as an indication for caesarean section. Maternal outcome is found to be better in vaginal delivery cases.

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