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Maternal and Perinatal outcome of Eclampsia in a tertiary centre of Central India

Bharti Sahu[1,*], Shruti Singh Parihar[2], Sonal Sahani[3]

[1,3]Assistant Professor, [2]PG Resident, Dept. of Obstetrics & Gynecology, NSCB Medical College, Jabalpur, Madhya Pradesh

***Corresponding Author:**
Email: bhartisahu26@gmail.com

Abstract

Eclampsia, A life threatening and most common medical complication affecting pregnancy. We evaluated the association of clinical profile, maternal and perinatal outcome among eclamptic patients admitted to our tertiary centre. This is a prospective cross section observational study, undertaken in Department of Obstetrics and Gynecology, NSCB Medical College Jabalpur (M.P.), from March 2015 to March 2016.

Result: In the current study we came across 266 patients of eclampsia, incidence being 3.82%. Majority belonged to age <21 years (55.3%), primi (67.3%), 97.4% were unbooked, 90.6% resided in rural areas and 63.9% of the cases presented between 28 - 37 weeks of gestation. Majority were (88%) antepartum eclampsia, 89.4% of patients delivered within 24 hours of admission, 76.4% had vaginal delivery. Most common complication was pulmonary edema in 29 patients and 83 patients required ventilatory support. We found 1 classical case of PRES syndrome and one of peripartum cardiomyopathy. Maternal mortality due to eclampsia was 25.2% and case fatality rate being 8.3%, perinatal death was 39.5% in eclampsia patients.

Conclusion: Eclampsia is an ongoing challenge for the whole medical community, the root of which lies in the soil of illiteracy, poverty and poorly implemented health care system.

Keywords: Eclampsia, Maternal morbidity and mortality, Perinatal outcome.

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Introduction

Preeclampsia associated with convulsions or coma is called eclampsia. Eclampsiainvariably precedes preeclampsia or may occur silently without any alarming signals. It usually affects young primigravidas and depending on the time of occurrence of convulsion it is categorized into antepartum, intrapartum and postpartum eclampsia.

It affects between 1 in 2000 to 1 in 3448 pregnancies in the western world but the incidence may be several times in developing countries.[(1)] In India, the incidence of eclampsia range from 1 in 500 to 1 in 30 (0.5%-1.8%),[(2,3)] the incidence however depends on the availability, accessibility and quality of antenatal care. Consequently rates are higher where health care provision is constrained for a variety of reasons.[(4)]

Maternal mortality in eclampsia is intolerably high in India, and ranges from 2%-30%, much more in rural established hospital than in urban equivalent. In India, the perinatal mortality of neonates of eclamptic mothers, is also very high to the extent of about 30–50%,[(5)] inspite of all efforts of Government to bring down maternal and perinatal mortality. The present study was undertaken with the intention to evaluate the maternal and perinatal outcome of eclampsia in a tertiary care hospital of central India.

Materials and Method

A prospective cross section observational study was carried out in 266patients all proven cases of eclampsia (hypertension, albuminuria, convulsion/ coma) admitted to the Department of Obstetrics and Gynaecology at NSCB MCH Jabalpur (M.P.) from March 2015 to March 2016.

All information regarding demographic profile, antenatal care, clinical finding, laboratory findings were noted. Seizures were controlled by using Magnesium Sulfate according to Pritchard regimen. Delivery of the patient was the definitive treatment. The outcome of both, the mother and her newborn was traced till discharge or death. The collected data was processed and statistically analysed by student test/ ANOVA was done.

This study was approved by the Research and Ethical Committee of the University of N.S.C.B. Medical College and Hospital Jabalpur.

Result

Out of 6963 admitted obstetrics patients 266 presented with eclampsia during the one year study period. This yielded an incidence of 3.82%. Most of the eclamptic patient (55.3%) were below 21 years of age, 88.7% were referred and 11.3% came directly. Majority (97.4%) patients has not received quality antenatal care. 94% of these patients did not have their blood pressure, urine protein checked during their antenatal period.(Table 1)

The highest risk of eclampsia is among the patient with first pregnancy 67.3%. Eclampsia occurred mostly (63.9%) in 28-3 weeks of gestation followed by 20.7% in pregnancies beyond 37 weeks. 15.4% patients had eclampsia before 28 weeks of gestation. (Table 2)

Among those who developed eclampsia, 88.3% were antepartum, 6% were intrapartum and 5.6% were

postpartum.76.4% patients delivered vaginally. The reasons for C- section were CPD, failed induction and malpresentation. 71.4% cases delivered within 24 hours of onset of convulsions.(Table 3)

Table 1: Demographic Profile

Variables	Frequency	Percentage
Age Group (Years)		
< 21	147	55.3
21-30	102	38.3
>30	17	6.4
Education		
Illiterate	113	42.5
Primary	124	46.6
>Primary	29	10.85
Locality		
Rural	241	90.6
Urban	25	9.4
Referred		
No	30	11.3
Yes	236	88.7
ANC Visit		
<3	259	97.4
3-6	7	2.6
BP Checkup in 3rd Trimester		
No	252	94.7
Yes	14	5.3

Table 2: Gestation

Gestation		Frequency	Percent
Parity	Primi	179	67.3
	2 – 3	75	28.2
	>3	12	4.5
Gestational Age	<28 Wks	41	15.4
	28 - 37 Wks	170	63.9
	> 37 Wks	55	20.7

Table 3: Time of Onset & No. of Seizures

Time of onset & no. of seizures		Frequency	Percent
Occurrence of convulsion	Antepartum	235	88.3
	Intrapartum	16	6.0
	Postpartum	15	5.6
No. of Convulsions	<3	108	40.6
	3-6	107	40.2
	>6	51	19.2
$MgSO_4$ Received before coming to NSCB	Given	222	83.5
	Not given	44	16.5
Delivery (Mode & Interval)			
Convulsion Delivery Interval	<6 hrs	48	18
	6 -24 hrs	190	71.4
	> 24 hrs	10	3.8
Mode of Delivery	Vaginal	201	76.4
	LSCS	62	23.3
	Died Undelivered	3	1.1

Maternal outcome: In the study period of 1 year, there were 87 maternal deaths. Eclampsia accounted for 22 maternal deaths, 3 died undelivered and 19 after delivery, accounting a case fatality rate of 8.3% due to eclampsia. Maternal mortality due to eclampsia was 25.2%. Many patients had more than one complication at the same time. Causes of death included pulmonary edema, acute renal failure, multiple organ failure. HELLP developed in 11 patients, of which 4 died (18%) and 7 survived. Pulmonary edema developed in 29 patients, 17 died (77.2%) and 12 survived. 13 patients had acute renal failure, 10 died (45%). 4 patients were taken up for dialysis following which 3 survived. 10 patients had septicemia and 6 (27.2%) succumbed to it. 1 case suffered had PRES and 2 had cerebral vascular accident as cause of death. 83 patients required ventilation. Out of which, 61 (25%) survived and all 22 cases which died were on ventilator. The most common reason for ventilation was pulmonary edema. 49 cases were kept on ventilation due to reasons like tachypnea, labored breathing, difficulty in maintaining oxygen saturation. 3 (1.2%) patients recovered from acute renal failure after dialysis. 7 cases (2.8%) which survived had APH. PPH developed in 13 (5.3%) cases. 2.8% cases recovered from HELLP syndrome. There was one case of cardiomyopathy. (Table 4)

Table 4: Maternal complications and outcome

Maternal complications and outcome	No. of Patients Live (%)	Died (%)
Acute renal failure	3 (1.2%)	10 (45%)
Pulmonary oedema	12 (4.9%)	17 (77.2%)
Antepartum haemorrhage	07 (2.8%)	01 (4.5%)
Postpartum haemorrhage	13 (5.3%)	00
Required ventilation	61 (25%)	22 (100%)
Septicaemia	04 (1.6%)	06 (27.2%)
HELP syndrome/DIC	07 (2.8%)	04 (18%)
Transient cortical blindness	00	00
Cerebrovascular accident	00	02 (9.09%)
Aspiration pneumonitis	00	01 (4.5%)
Multi organ failure	00	08 (36%)
Others-		
PRES	01(0.4%)	00
Peripartum Cardiomypathy	01 (0.4%)	00
Ventilator associated pneumonia	00	01 (4.5%)
Pulmonary embolism	00	01 (4.5%)
Metabolic encephalopathy	00	01 (4.5%)
Uremic encephalopathy	00	01 (4.5%)
Severe anaemia	00	01 (4.5%)
Death	00	22 (100%)
Discharge	244 (100%)	00

Perinatal mortality: Out of 263 cases, (3 died undelivered) 104 fetus died. Perinatal mortality rate was 39.5% Intrauterine death were 56 (53.8%). Still birth accounted for 19.2% of perinatal mortality and 26.9% of neonatal death. 124 newborn got admitted in nursery, of which 28 (26.9%) died, 96 (60%) were live. There were 28 (26.9%) neonatal deaths. 63 (39.6%) babies were shifted to mother side after observation. Reasons for admission were preterm (21.1%), IUGR (15.1%), low birth weight (69.4%), meconium aspiration, low apgar score. Most common causes of perinatal death were birth asphyxia, prematurity, meconium aspiration and neonatal sepsis. (Table 5)

Table 5: Fetal complication and outcome

Fetal complications and outcome	No. of Patients Died (%)	Live (%)
IUD	56 (53.8%)	00
Still birth	20 (19.2%)	00
Nursery admission	28 (26.9%)	96 (60%)
Intrauterine growth retardation	06 (5.7%)	15 (9.4%)
Preterm baby	18 (17.3%)	22 (13.8%)
Low birth weight	40 (38%)	50 (31.4%)
Neonatal death	28 (26.9%)	00
Health baby	00	63 (39.6%)

Discussion

The incidence of eclampsia varies from country to country. In general eclampsia is preventable and it is less common in developed countries(UK, USA).

In our study, the incidence of eclampsia was found to be 3.82% of hospital deliveries. The high incidence in our study is due to huge burden of referrals to N.S.C.B. Medical College, Jabalpur mainly from nearby underprivileged tribal areas, where the antenatal facilities are still poor.

Deepika Pannu et al, 2014 reported the incidence of eclampsia as 3.2% of all hospital deliveries.[6]

Eclampsia was more frequently noticed in pregnant women of less than 30 yrs age (93.5%) and primigravidas (67.3%) which is similar to a study done by Sunita TH et al (85% and 79%).[7] Majority of patients (97.4%) of eclampsia in our hospital were not booked with us. Sunita TH et al 2013,[7] in her study found that majority of eclamptic cases there was lack of antenatal care. In our study 88.31% of eclampsia were antepartum, 6% were intrapartum and 5.6% were postpartum. In Abdullah et al(2010)[8] study antepartum eclampsia was seen in 21 (47%) cases followed by post partum 15 (33%) and intrapartum 9 (20%).

In our study Ecalmpsia was seen in 20% of patients at term gestation and 63.9% preterm which is different from a study done by Khanum M et al[9] i.e. 53% at term gestation and 63.9% at near term gestation. 40% of patients had 3-6 episodes of convulsions and19%had more than 6 convulsions. There is a significant correlation between maternal death and the number of convulsions. At the time of presentation 6 patients had normal BP recording, 96 had mild and 167 had severe hypertension and Mattar F et al[10] quoted 16% of the patients had no hypertension, 30%-60% had mild hypertension and 20%-54% had severe hypertension. Hypertension is considered to be the hallmark for the diagnosis of eclampsia. The diagnosis of eclampsia is usually associated with proteinuria (at least 1+ on dipstick). In our study, 13.6% had 3+, 81.8% had 2+, 4.5% had 1+which is not like the study done by Mattar

F et al.[10] Vaginal delivery was the common mode of delivery in our study (76%) while 23.8% of cases underwent cesarean section. Common indication for cesarean section were CPD, failed induction and malpresentation. In Adamu AN et al about 45% (N=643) delivered spontaneously, 28.7% (N=277) had instrumental delivery while 19.6% (N=189) had caesarean section.

Eclampsia itself is not an indication for cesarean section and mode of delivery had no significant effect on the outcome of the eclamptics as per Ibrahim A et al. In our study there was a significant impact on maternal and perinatal outcome by mode of delivery. The definitive treatment of eclampsia is delivery. Attempts to prolong pregnancy in order to improve fetal maturity are unlikely to be of any value. Labour is usually induced with prostaglandins and early rupture of membranes. The obstetrician can monitor and await vaginal delivery once the patient is stable and convulsions are under control. Depending on the gestational age of fetus, fetal wellbeing, presence or absence of amniotic fluid, Bishop score and maternal condition, caesarean section may be performed. Prudent and prompt selection of cases for either vaginal delivery or cesarean section has positive impact on the maternal and perinatal outcome. The shorter the convulsion - delivery interval, the better is the prognosis. All our patients received magnesium sulfate as per Prichard's regimen to prevent convulsion. Efficacy of magnesium sulfate in prophylaxis and management of eclamptic convulsions is proven and trustworthy. Third delay in reaching to the hospital and higher number of convulsions increases maternal morbidity and mortality. It was found that there were 22(8.3%) maternal deaths or case fatality rate. Out of 87 deaths, 22 were because of eclampsia in a year(25.2%).

Dr. Malay Sarkar et al (2011),[11]Eclampsia accounted for 45.36% of total maternal death (total death 97) recorded within 4 year period, with case fatality rate 4.96%.

The most common causes of maternal death are pulmonary edema and acute renal failure secondary to abruption placenta and multi organ failure. There were 39.5% perinatal deaths due to eclampsia. The most common causes of perinatal death are fetal asphyxia, prematurity, fetal growth restriction and acidosis.

Perfect quality antenatal services can diagnose preeclampsia and its timely management can reduce the incidence of eclampsia and subsequent morbidity and mortality. Vigorous and prompt management of eclampsia will reduce the maternal and perinatal morbidity and mortality. Unfortunately 95.5% who died had first pregnancy, maternal mortality was higher in those who had longer convulsion delivery interval. Deranged renal and liver profiles were significantly associated with adverse maternal outcome. In our study perinatal mortality was high in patients who had more than 6 convulsion, vaginally delivered, babies less than 2 kgs, urine albumin >2+. Eclampsia stands first in maternal mortality with morbidity. Maternal morbidity includes severe bleeding from abruption placentae with its resulting coagulopathy, pulmonary edema, aspiration pneumonia, acute renal failure, cerebrovascular haemorrhage, retinal detachment and PRES.

Perinatal mortality and morbidity is another impact factor in eclampsia patients, as the definitive treatment is only termination of pregnancy irrespective of gestational age. The primary target in eclampsia is achieving control of convulsions, control of blood pressure and terminating pregnancy within optimal time frame. At all health providing levels appropriate use of anticonvulsants, anti-hypertensives along with safe culmination of pregnancy should be encouraged for these patients. If need is felt referral to a well-equipped higher center should be done promptly without wasting time along with by appropriate emergency obstetric care.

Conclusion

Eclampsia is an ongoing challenge for the whole medical community, the root of which lies in the soil of illiteracy, poverty, poorly implemented health care system. Eclampsia is associated with significant maternal and perinatal morbidity and mortality. The higher mortality is due to high percentage of patient being unbooked, majority receive no therapeutic intervention until admission. Government Medical College, Jabalpur is a tertiary referral centre for the peripheral under developed and tribal districts where there is lot of poverty, lack of awareness and poor antenatal services. All these lead to delay in the diagnosis and early detection of warning symptoms preceding eclampsia, like, edema, headache, nausea, vomiting, epigastric pain, blurring of vision and thereby delay in management, leading to various complications and resulting high mortality and morbidity.

To combat this heath problem, drastic changes are needed which require active participation of the community, government and non-government organization, doctors and nurses for various strategies addressing health education of the community, provision of proper antenatal care to all pregnant women by implementation of mother and child health care system, proper training of medical staff regarding emergency care of eclampsia and early referral to tertiary health care system. Maternal and newborn deaths due to preeclampsia/ eclampsia are preventable: by increasing community awareness about the condition, improving antenatal care quality, and scaling up proven best practices to prevent mild pre-eclampsia's escalation to severe pre-eclampsia and eclampsia.

By detecting and managing pre-eclampsia, judiciously, thus preventing eclampsia, can improve the survival rate of women and babies in developing countries.

At the end of the study we suggest the following measures to improve the outcome of these cases:

1. At least 5 antenatal visits must be made compulsory for a patient and the visits must be more frequent during 3rd trimester of pregnancy.
2. The health worker in the periphery should be sensitized regarding the importance of BP recording in the pregnant mother and the sign of severe preeclampsia and imminent eclampsia must be explained to them. The health workers are the roots of PHC, their active participation would result in early referral and prevention of morbidity and mortality due to preeclampsia and eclampsia.
3. As government is providing finance for institutional deliveries, it can also provide financial incentives for antenatal checkups in the institution.
4. A mobile unit consisting of trained doctors with all facilities can be constituted and this mobile unit can provide at least fortnightly visits to the periphery for better antenatal care.

In conclusion, the basic mantra to prevent the morbidity and mortality related to eclampsia is better antenatal care which will depend not just on the presence of trained health workers but also on the awareness of the patients regarding antenatal care.

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