Research Article

Journal of
Obstetrics and Gynecological Surgery

Prasad S, et al., J Obst Gynecol Surg 2022, 3:2

A Prospective Study of Maternal and Perinatal Outcomes in Eclampsia in a Tertiary Care Centre

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Received date: November 18, 2022; **Accepted date:** December 9, 2022; **Published date:** December 16, 2022

Citation: Prasad S, Shivkumar PV, Haswani R. A Prospective Study of Maternal and Perinatal Outcomes in Eclampsia in a Tertiary Care Centre. *J Obst Gynecol Surg.* 2022;3(2): 23-26. doi: 10.52916/jogs224028

ABSTRACT

Background: The term eclampsia is derived from a Greek word, meaning like a flash of lightening. The onset of convulsions in a woman with pre-eclampsia that cannot be attributed to other causes is termed eclampsia. It is a major cause of maternal and fetal mortality and morbidity in our country. The management of eclampsia is still challenging to the obstetrician, requiring the greatest skill, judgement, and patience.

Methods and Materials: Our study is an observational and prospective study of 58 cases admitted with eclampsia in Mahatma Gandhi Institute of Medical Sciences (MGIMS), Sewagram. The study was extended from January 2020 to December 2021. The inclusion criteria were all the cases of eclampsia (antepartum and postpartum), primigravida and multigravida, duration of gestation>20 weeks. Patients with convulsion during pregnancy or in puerperal period attributed to epilepsy or other causes were excluded from the study.

Results: In our study majority of cases (58.6 %) belong to the younger age group </= 25 years and majority of them (72.4%) were primigravida. Most of the patients (93%) were in third trimester and 41% were term (>/= 37 weeks). 55.2% had antepartum eclampsia, 36.2% postpartum and 8.6% had intrapartum eclampsia. Most common complication observed was need of blood or blood products transfusion (35 %), Hemolysis, Elevated Liver Enzymes Low Platelets (HELLP) syndrome (21%), prolonged Intensive Care Unit (ICU) admission (19%) followed by abruption, Disseminated Intravascular Coagulation (DIC), Acute Kidney Injury (AKI), Posterior Reversible Encephalopathy Syndrome (PRES), hypertensive retinopathy, pulmonary edema. Majority of patients (57%) underwent cesarean section, most common indication being poor bishop's score with deteriorating maternal condition (54.5%). Out of 58 cases, 84.4% were live births and 15.6% were still born. 63.2% of all live births were small for gestational age, 44.8% had Neonatal Intensive Care Unit (NICU), and 8% had early neonatal death.

Conclusion: Early pregnancy registration, good antenatal care and counselling about warning symptoms, early identification of pre-eclampsia and its complications, and timely intervention can reduce the incidence of eclampsia. Early identification of high-risk cases at primary healthcare facilities including severe pre-eclampsia, impending eclampsia and eclampsia and immediate referral to tertiary care centre equipped with multidisciplinary team, ICU and NICU facilities, might reduce fetal morbidities like prematurity, neonatal intensive care unit admission etc. and maternal morbidities like prolonged hospitalisation, AKI, DIC , pulmonary edema, multi organ dysfunction syndrome etc. and mortality.

Keywords:

Eclampsia, Hemolysis, Elevated Liver Enzymes Low Platelets (HELLP) syndrome, Posterior Reversible Encephalopathy Syndrome (PRES), Disseminated Intravascular Coagulation (DIC), Acute Kidney Injury (AKI), Multiple Organ Dysfunction Syndrome (MODS), Pulmonary edema, Cesarean section, Intrauterine demise

Introduction

The term eclampsia is derived from a Greek word, meaning like a flash of lightening [1]. 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 [2].

In developed countries, approximately 1 in 2000 deliveries is complicated by eclampsia, whereas the incidence in developing countries varies from 1 in 100 to 1 in 1700 cases [3]. In India the incidence of eclampsia has been quoted as 220/10,0004. Majority of the cases of eclampsia are the patients who have not received proper medical attention during their antenatal period [4].

Eclampsia occurs more commonly in last trimester of pregnancy and becomes increasingly more frequent near term. It can occur during antepartum (35% to 45%), intrapartum (15% to 20%) or

in postpartum (35% to 45%) period [5]. The clinical features of eclampsia include seizures or postictal state, headache usually frontal, generalized oedema, vision disturbance such as blurred vision and photophobia, right upper quadrant abdominal pain with nausea, amnesia, and other mental status changes [6]. It is estimated that about 7% of maternal mortality is associated with hypertensive disorders of pregnancy, particularly eclampsia [7]. Detail analysis of data from 1980 to 2015 (January–February) shows that there is no reduction in incidence of eclampsia and perinatal mortality rate over the last few decades though maternal mortality has shown a slight receding trend 14.12% in 1982 to 2.2-9% in 2010 [8].

Deaths in eclampsia are due to cardiopulmonary failure, Disseminated Intravascular Coagulopathy (DIC), Acute Kidney Injury (AKI), cerebrovascular accident, Hemolysis, Elevated Liver Enzymes and Low Platelets (HELLP) Syndrome, Multi Organ Dysfunction Syndrome (MODS) and abruption [9].

Poor fetal outcome is mostly attributed by iatrogenic prematurity, Respiratory Distress Syndrome (RDS), intrauterine asphyxia, Intrauterine Growth Restriction (IUGR) and Intrauterine Death (IUD). Additionally, at later stages of life, IUGR may result in neurodevelopmental defects in children [10].

Methods and Materials

A prospective observational study was conducted at a tertiary care centre for over a period of 2 years (January 2020 to December 2021) to analyse the perinatal and maternal outcome in all cases of eclampsia.

All 58 cases were evaluated by detailed history, thorough clinic examination, and blood investigations. All cases were admitted in ICU and treated with magnesium sulphate (Pritchard regimen). Pregnancy was terminated in all antenatal patients except 2 cases (who were conserved till 34 weeks as in patient) irrespective of gestational age. Intravenous/oral labetalol and nifedipine were given to control the blood pressure if necessary. The variables analyzed were age, parity, booking status, gestational age, mode of delivery, feto-maternal morbidity, and mortality. All the patients were followed up till 6 weeks post-partum.

Inclusion criteria: All the cases of eclampsia (antepartum, intrapartum, and postpartum), primigravida and multigravida, duration of gestation>20 weeks.

Exclusion criteria: Patients with convulsion during pregnancy or in puerperal period attributed to epilepsy or other causes.

Results

In our study majority of cases i.e 58.6 % belong to the young age group </= 25 years and majority of the women (72.4%) were primigravida (Table 1).

Table 1: Patient profile.

Age	Parity	
	Primigravida	Multigravida
</=20	2	-
21-25	28	4
26-30	10	10
30-40	2	2

Most of the patients i.e 93% were in third trimester when they had eclamptic episode, out of which majority (72%) presented at >/= 34 weeks of gestation. 41% of total cases were term (>/= 37 weeks) which supports the fact that chances of eclampsia increase with increasing gestational age (Tables 2,3).

Table 2: Patient profile.

Gestational Age	N	%
20-28 weeks	4	6.89%
>28- <34 weeks	12	20.60%
34-36+6	18	31%
37-38+6	15	25.80%
39-40+6	8	13.70%
41 and above	1	1.70%

Table 3: Patient profile.

Booked	12	20.60%
Unbooked	46	79.30%
Known Pre-eclampsia	13	22.40%
Not a known Pre-eclampsia	45	77.60%

Out of 58 patients, 55.2% had antepartum eclampsia, 36.2% postpartum and 8.6% had intrapartum eclampsia. Out of 32 antepartum cases, 2 pregnancies were conserved till 34 weeks and had good feto-maternal outcome (Table 4).

Table 4: Type of eclampsia.

Ante-partum	32*	55.20%
Intra-partum	5	8.60%
Post-partum	21	36.20%
*2 out of 32 – intercurrent eclampsia		

All the patients received magnesium sulphate immediately after they reached the healthcare facilities, despite those 4 patients required other anti-convulsant like levetiracetam, midazolam etc. 25 patients had 1st episode of convulsion at home and out of them 17 patients had 2 or more than 2 episodes of convulsions probably because of type I delay (delay in seeking care due to lack of awareness) (Table 5).

Table 5: Maternal complications.

Complication	No. of cases	%
Blood/Blood product transfusion	20	35%
HELLP syndrome	12 (4*)	21%
Prolonged ICU stay	11	19%
Abruption	7	12%
DIC	6	10.30%
AKI	4	6.80%
PRES	3	5%
Hypertensive retinopathy	2	3.40%
Pulmonary edema	2	3.40%
Post-partum haemorrhage	1	1.70%
Mortality	1	1.70%

Most common complication observed was need of blood or blood products transfusion (35 %), HELLP syndrome (21%) including 4 cases of partial HELLP, prolonged ICU admission

(19%), abruption (12%), DIC (10.3%), acute kidney injury (6.8%), PRES (posterior reversible encephalopathy syndrome) (5%), hypertensive retinopathy (3.4%), pulmonary edema (3.4%). Only 1 patient with pulmonary edema required transient ventilatory support, 1 patient had post-partum hemorrhage and was managed meticulously and unfortunately 1 patient died due to DIC with MODS with HELLP syndrome secondary to eclampsia.

57% patients had prolonged hospitalization i.e more than a week. All the cases were followed up till 6 weeks post-partum and it was observed that 32.7% (19/58) patients required antihypertensive drugs in post-natal period.

Majority of patients (57%) underwent c-section, most common indication being poor bishop's score with deteriorating maternal condition (54.5%) and fetal distress in first stage of labor (45.5%) due to meconium-stained liquor, abruptio placenta (Table 6).

Table 6: Mode of delivery.

Vaginal Delivery	Induced	17	41.30%
	Spontaneous	7	
C-section	Induced	15	57%
	Without induction	18	
Instrumental(forceps)		1	1.70%

Induction of labor was done in 32 patients (55.2%), out of which 17 patients delivered vaginally and 15 patients underwent c-section due to various reasons. 8 patients were in spontaneous labor at the time of admission and delivered vaginally including 1 forceps assisted delivery.

Out of 58 patients, 49(84.4%) gave live births and 15.6% had intrauterine demise. Out of 49 live births, term and preterm births were 39.6% and 44.8% respectively. Most of the preterm births were iatrogenic. 63.2% of all live births were small for gestational age, 44.8% were admitted in NICU, reasons being prematurity, low birth weight, respiratory distress, meconium aspiration syndrome, neonatal seizures etc., 8% had early neonatal death (Table 7).

Table 7: Fetal outcome.

Fetal Outcome		**N**	**%**
Live birth (49 out of 58)	Term	23	39.60%
	Preterm	26	44.80%
Intrauterine demise		9 (1 term)	15.60%
Small for gestational age		31	63.20%
NICU admission		22	44.80%
Early neonatal death		4	8.16%

Discussion

Eclampsia is a disease common in extremes of age. In our study most commonly affected group was of young patients (<25 years of age) and primigravida. Most of the patients (93%) were in third trimester and 41% were term (>/= 37 weeks). Similarly, Rani, et al. and Choudhary, et al. also found highest number of eclampsia patients in gestational age ≥37 weeks [11,12].

79.3% patients were not booked at any healthcare facility, though they were registered at primary health care facility and had been immunized, they were not compliant with routine antenatal checkups and investigations.

In our study, out of 32 antepartum cases, 2 pregnancies were conserved till 34 weeks and had good feto-maternal outcome. Both these 2 patients and their relatives were keen on continuing the pregnancy and ready for in hospital management. Patients were given loading and maintenance dose of magnesium sulphate till 24 hours since 1 episode of convulsion, started on oral hypertensives, steroid for fetal lung maturity was administered and closely monitored in ICU. Case reports of intercurrent eclampsia by Patel, et al. [13] and Shushil Kumar, et al. [14] has also shown a favorable feto-maternal outcome.

Commonest mode of delivery in our study was c-section (57%), most common indication being poor bishop's score with deteriorating maternal condition. Similar observation was found in the study by Rani, Choudhary, and Manjusha, et al. [11,12,15].

In our study, 15.6% babies were still born. 63.2% and 44.8% of all live births were SGA and premature babies respectively. Significant association has been noted between eclampsia and perinatal mortality and morbidity in other studies also like Rani, et al. [11], Ikeanyi, et al. [14] etc. Another important observation noted was that maternal morbidity and mortality were reduced because of early intervention but fetuses were exposed to the risk of iatrogenic preterm birth and neonatal complications [16].

Conclusion

Even today eclampsia is a dreaded complication in pregnancy which is associated with a great deal of feto-maternal morbidity and mortality. Early pregnancy registration, good antenatal care and counselling about warning symptoms, early identification of pre-eclampsia and its complications, and timely intervention can reduce the incidence of eclampsia. Early identification of high-risk cases at primary healthcare facilities including severe pre-eclampsia, impending eclampsia and eclampsia and immediate referral to tertiary care centre equipped with multidisciplinary team, ICU and NICU facilities, might reduce feto maternal morbidity and mortality. We feel there is a

place for "treat the disease and conserve the pregnancy" in the modern obstetrics because of better understanding of the disease, availability of better healthcare facilities, various anti-hypertensives drugs and fetal monitoring. The policy of waiting to terminate the pregnancy in antepartum eclampsia should be considered occasionally if patient is responding to treatment, though there is a need of larger studies for the cases of intercurrent eclampsia.

Limitations- Patients were lost to follow up, so long term implications of eclampsia couldn't be analysed in our study.

Ethics Statement

The study was approved by the institutional ethical committee.

Informed Consent

Women with eclampsia, who fulfilled the inclusion criteria, were included in our study after their written, valid, and informed consent.

Conflict of Interest

The authors declare no competing financial interest.

Funding

No.

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