



Maternal and Perinatal outcome in Eclampsia

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Abstract

Objective: *To observe the maternal and Perinatal outcome in eclampsia.*

Material and Methods: *Data was collected from eclamptic women admitted to the emergency ward of Obstetrics and gynecology of IMS and SUM hospital, Bhubaneswar, India during the period of Sept 2013 Aug 2015. Maternal and fetal complications were noted.*

Results: *The incidence of eclampsia was 1.58% during the study period. Majority of the patients were less than 30 years of age (80.7%). There were a significantly higher number of women (n=42) from poor socio-economic strata of the society. Majority of the patients (55.7%) had no antenatal checkups. Caesarean delivery rate in our institution was 57.69%. 38.4% patients needed admission to ICU. Perinatal death rate was 285/1000 live births. There were 4 maternal deaths (7.69%) during the study period.*

Conclusion: *Eclampsia is a major obstetric emergency that needs adequate management to avoid catastrophic events. Early diagnosis and referral of cases from primary health care unit along with institution therapy and timely intervention can improve the prognosis.*

Keyword: *Eclampsia, Maternal outcome, Perinatal outcome.*

Introduction

Eclampsia is an extremely severe form of pre eclampsia characterized by the sudden onset of generalized tonic-clonic seizures. In a majority of the cases (80%) the disease is preceded by severe pre-eclampsia. This condition affects between 1 in 2000 and 1 in 4000 deliveries in the developed countries but the incidence may be several times higher in under developed countries. In India, the incidence of eclampsia has been quoted as 1.56%⁽¹⁾. Pre-eclampsia and eclampsia are a major

Cause of approximately 20% of all maternal deaths in USA and around half of them are associated with eclampsia⁽²⁾. Perinatal mortality occurs in 5-12% of the cases in developed countries⁽³⁾, the common causes of fetal death being prematurity and fetal asphyxia. Eclampsia occurs antepartum in 35-45 % intra partum in 15-20% cases and postpartum in 35-45% of the cases. Maternal complications are higher in antepartum eclampsia.

Material and Methods

The study was conducted in IMS and SUM Hospital, Bhubaneswar, Odisha, India from September 2013 to August 2015 over a period of 2years. All pregnant women presenting with antepartum and intra partum eclampsia who were admitted to the labor ward of IMS &SUM Hospital BBSR, India during the period from September 2013 to August 2015 were included in the study. Eclampsia was defined as occurrence of generalized tonic clonic convulsions and or coma in women with pre-eclampsia. The cases were managed by a team of obstetricians, anesthesiologists, Physicians and Neonatologists. All cases of eclampsia were treated with antibiotics, anti-hypertensives and the care of the unconscious patients as required. All these patients were treated with magnesium sulphate by Pritchard's regime. Labor was induced in such cases after control of fits by intracervical prostaglandins, artificial rupture of membranes and intravenous oxytocin infusion. They were subjected to L.S.C.S when there was failure of induction, uncontrolled fits or other obstetric indications. Clinical improvement or deterioration with development of complications like ARF, Heart failure, HELLP syndromes etc. were meticulously observed. The total number of deliveries during the study period was 3279. There were 52 case of eclampsia during the study period. Data was collected from the files of patients, investigations and treatment given was noted.

Results

A total of 3279 patients delivered at IMS & SUM Hospital during the study period. 52 patients presented with either antepartum or intra-partum eclampsia. The incidence of eclampsia in the present study was 1.58%.

Majority of the patients (80.7%) were less than 30 years old. 88.4% (n=46) of the patients were nulliparous (Table-1). Majority of the patients (55.7%) had no antenatal check up throughout the pregnancy. 34.61% of the eclamptic women had regular antenatal checkups (Table 1). There were

a significantly higher number (n=42) of women from poor socioeconomic strata. Illiteracy accounted for 53.84% of the eclamptic patients. Blood pressure, proteinuria and serum creatinine levels are summarized in table 2 and table 3.

61.5% (n=32) patients were admitted at ≥ 37 weeks of gestation. (Table 4). Caesarean delivery rate in our institution was 57.69% (Table 5). 25% (n=13) of the patients with eclampsia had vaginal delivery. Instrumental delivery was done in 11.53% of the cases (n=6). Asphyxia was defined as an Apgar score < 7 at 5min and occurred in 28.57% of the total live births (Table 6)The perinatal outcome is summarized in table 7. There were a total of 52 delivered babies. There were 35 live births. There were 10 perinatal deaths (8stillborn and 2 early neonatal deaths) which yielded a perinatal mortality of 285/1000 live births.

Major neonatal complications associated with eclampsia are summarized in table 8. The major neonatal complications included septicemia (16.12%), Convulsions (12.9%), pneumonia (6.45%). There were 4 maternal deaths accounting for a maternal mortality rate due to eclampsia of 7.69%. 38.4% (n=20) patients needed admission to the intensive care unit (ICU). Placental abruption occurred in 5 cases (n=9.61). HELLP syndrome occurred in 5.76% cases (n=3) (Table 9)

Table 1: Demography and reproductive characteristics of eclampsia

Characteristics	Eclampsia	
MATERNAL AGE	NO.(52)	%
Age < 30 yrs	42	80.7
Age > 30 yrs	10	19.2
<u>Parity</u>		
Nulliparity	46	88.4
Parity	6	11.5
<u>Maternal education</u>		
Post Secondary	4	7.6
Secondary	7	13.04
Primary	13	25
Illiterate	28	53.84
<u>Antenatal Care</u>		
No Antenatal Care	29	55.7
Irregular antenatal Care	3	5.76
Regular antenatal Care	20	34.61
<u>Socio-economic status</u>		
Poor	42	80.7
Moderate	10	19.2

Table 2: Blood pressure

Characteristics	Eclampsia (n = 52)	%
Systolic blood pressure (mmHg) range		
140-200	20	34.6
170-220	32	61.5
Diastolic blood pressure (mmHg) range		
100-150	11	21
110-160	41	78.8

Table 3 Proteinuria and serum creatinine levels

Eclampsia Characteristics	(N=52)	%
Proteinuria (MM IN 24 HOURS)		
400-2500	33	63.46
750-3000	19	36.53
Serum Creatinine mg/dl		
0.6-2.0	13	25
1.0-4	39	75

Table 4 Distribution of Cases According To Gestational Age

Characteristics	Eclampsia	
	NO.(52)	%
Gestational age		
Age ~ 37 Weeks	32	61.5
Age 32-37 Weeks	15	28.84
Age < 32 Weeks	5	9.61

Table 5 Mode of Delivery

Mode of delivery	No.(52)	%
Vaginal delivery	13	25
Instru mental delivery	6	11.53
Caesarean delivery	30	57.69
Destructive operation	3	5.76

Table 6 APGAR score

Characteristics	Eclampsia		
	No. (35)	%	
Apgar Score			
1Minute	0-3	14	40
	4-6	10	28.54
	7-10	11	31.42
5Minutes	0-3	2	5.71
	4-6	8	15.38
	7-10	25	71.42

Table 7 Perinatal Outcome in eclampsia

Perinatal Outcome	Eclampsia (n = 52)	
	No.	%
Live Birth	35	67.3
IUD at the time of admission	5	9.61
Fresh stillbirth	3	5.76
Total stillbirth	8	15.38
Birth Asphyxia	10	28.57
Low birth weight	21	60
Normal birth weight	14	40

Table 8 Major neonatal complication associated with eclampsia

Neonatal complications	Eclampsia (31)	
	No.	%
Septicemia	5	16.12
Pneumonia	2	6.45
Bronchopulmonary dysplasia	2	6.45
Convulsions	4	12.99
Hypo ischemic encephalopathy	2	6.45
Neonatal death < 7 days	2	9.6

Table 9 Maternal Outcome in Eclampsia

Maternal outcome	Eclampsia (n = 52)	
	No.	%
Placental abruption	5	9.61
Ascites	3	5.76
HELLP Syndrome	3	5.76
Pulmonary Edema	11	21.5
Severe Renal impairment	5	9.61
Cardiac arrest	1	1.92
ICU Admissions	20	38.4
Blindness	2	3.84
Death	2	3.84

Discussion

Eclampsia is an acute obstetrical emergency peculiar to the pregnant and puerperal women. It is strictly confined to human beings. So, it is called a Gift of human propagation and culture in schillers words. Eclampsia continues to be a major problem particularly in developing countries, contributing significantly to high maternal and perinatal morbidity and mortality ⁽³⁾. Currently

there are no screening tests available which are reliable, valid and economical that can predict preeclampsia and eclampsia. The incidence of eclampsia in our study was 1.58%. This is comparable to other studies^(1, 4, 5). However our incidence is higher than the incidence observed in western countries⁽⁶⁾. Pannu et al⁽⁷⁾ in their study found the incidence of eclampsia to be 3.2 per 1000 deliveries. The total prevalence of eclampsia is 5.2 per 1000 live births in a study by Giordano et al⁽⁸⁾. According to the royal college of obstetrics and gynecologists (2006), the incidence approximates 1 in 2000 in the United Kingdom. These differences in incidences among different areas could be explained by geographical variation, access to health care services and medical attention provided to the patients⁽⁴⁾. The incidence of eclampsia has decreased over the years because it is somewhat preventable by adequate prenatal care. The incidence of eclampsia in a study by Akhtar et al⁽⁹⁾ was 3.05%. This shows that eclampsia is still a major killer disease in many countries.

Majority of the patients were less than 30 yrs. of age. Albos et al⁽¹⁰⁾ in their study found that an age below 17 years is highly associated with eclampsia. Most of the women in the present study (88.4%) were nulliparous supporting the hypothesis that it is a disease of young mothers. The findings in our study are comparable to other studies^(4,11,12). Rajashri et al⁽¹³⁾ in their study found that a majority of the patients (74.48%) were primigravida. The exact mechanism for occurrence of eclampsia in nulliparous is still unknown. Sibai et al⁽¹⁴⁾ postulated possible factors like abnormal placentation, immunological factors in fetus from paternal side, genetic influences etc. for occurrence of eclampsia in primiparous females. In a study by Abalos et al⁽¹⁰⁾ primigravida and lack of formal education were more frequent in the group of eclamptic women. Majority (55.7%) of the patients in the present study had no antenatal care. This shows lack of awareness among these patients regarding the antenatal care since majority of them are from poor socio-economic strata (80.7%) and most of

them are illiterate. It has been established that good antenatal care can prevent the occurrence of eclampsia in majority of the cases⁽¹⁵⁾.

The majority of the pregnant women in our study had eclamptic seizure at gestational age ≥ 37 years suggesting more incidences near term. Caesarean section was the most Common method of delivery which is comparable to other studies^(4,16,1). In current obstetrical practice, the large majority of eclamptic women are delivered by caesarean section because it has resulted in better perinatal outcome. Some studies have reported better perinatal outcome with caesarean section as compared to vaginal delivery^(13,17). In the present study, the majority underwent Caesarean section due to associated abnormalities like unripe cervix, fetal growth restriction, uncontrolled blood pressure, fetal distress and also to avoid the maternal and fetal effects of pregnancy continuation. The most common exception to cesarean delivery were women with fetal demise and those who came in spontaneous labor.

Present study depicted mean APGAR score of new born babies at 1 min to be 11.67 ± 2.08 . The favorable APGAR score in our study was due to use of magnesium sulphate in the treatment of eclampsia as well as timely intervention. Magnesium sulphate is the drug of choice for Primary and secondary prevention of eclamptic seizures⁽¹⁸⁾. According to the multinational eclampsia trial collaborative group study (1995) Maternal death rate with magnesium sulfate was significantly lower (3.1%) as compared with other regimens like diazepam and phenytoin (4.9%)⁽¹⁹⁾. The Perinatal mortality rate in our study was 285/1000 deliveries which shows that eclampsia is still a major cause of Perinatal mortality. Ndaboine et al⁽⁴⁾ had a perinatal mortality of 207/1000 live births. But our incidence is lower than a study done by George et al⁽¹⁷⁾ which had a perinatal mortality of 411 per 1000 live births. Perinatal mortality is an important indicator of the status of maternal and child health. It is also an indicator of the condition of obstetric care and the level of economic development of a community⁽²⁰⁾. The present study observed a maternal death

rate of 7.69% which is comparable to other studies^(4,21). There has been a significant reduction in maternal mortality and morbidity in developed countries during the past 50 years. But in contrast maternal complications and maternal mortality remains high in developing countries⁽²²⁾ Dash et al⁽²³⁾ reported eclampsia as the leading cause of maternal death in their study. According to the Indian council of medical research task force study⁽²⁴⁾ Preeclampsia and eclampsia are responsible for 24% of all maternal deaths in India. 38.4% patients with eclampsia were admitted to the intensive care unit (ICU). The most common indications for ICU admission were pulmonary edema, severe renal impairment and HELLP syndrome. Many of the patients referred to our hospital were already critically ill. In most of the cases, eclampsia developed at home and /or during transport. 3.84% (n=2) of the patients had blindness. Blindness is less common and usually reversible. Cunningham and associates⁽²⁵⁾ in their study found that of 15 women cared for at parkland hospital, blindness lasted from 4hours to 8 days but it resolved completely in all cases. Moseman and Shelton et al⁽²⁶⁾ described a woman with permanent blindness due to a combination of infarctions in the retina and lateral geniculate nucleus bilaterally. In many cases of eclampsia associated blindness, visual acuity improves but vision may be permanently impaired if caused by retinal artery occlusion⁽²⁷⁾.

Eclamptic encephalopathy occurred in 5.76% cases (n=3). In eclampsia most of the life-threatening conditions involve the central nervous system. Eclamptic encephalopathy is essentially a vasogenic edema with disruption of the blood-brain barrier⁽¹¹⁾. In most of the cases, these abnormalities are reversible if adequate treatment is started⁽⁷⁾.

Conclusion

Poor maternal and neonatal outcome in eclampsia cases reveals its seriousness. Early diagnosis and referral of cases from primary health care units along with institutional therapy and timely intervention can improve the prognosis.

References

1. Swain S, Ojha KN, Prakash A. Maternal and perinatal mortality due to eclampsia. *Indian Pediatr* 1993 Jun; 30(6) : 771-73.
2. MacKay AP, Breg CJ, Atrash Hk. Pregnancy related mortality from preeclampsia and eclampsia. *Obstet Gynecol* 2001; 97:533-38.
3. Parik F, Moodley J. Maternal and Neonatal outcome in early and late onset preeclampsia. *Semin Neonatol*. 2000 Aug; 5(3):197-207.
4. Ndaboine EM, Kihunrwa A, Rumanyika R, Im HB, Massinde AN. Maternal and perinatal outcomes among eclamptic patients admitted to Bugando Medical Centre, Mwanza, Tanzania. *Afr J Reprod Health*. 2012 Mar; 16(1):35-41.
5. BS. Dhananjay, G. Dayananda, D. Sendilumar, Niranjana Murthy. A Study of Factors Affecting Perinatal Mortality in Eclampsia. *JPBS* 2009; V22 No.2:2-5
6. Taner CE1, Hakverdi AU, Aban M, Erden AC, Ozelbaykal U. Prevalence, management and outcome in eclampsia. *Int J Gynaecol Obstet*. 1996 Apr; 53(1):11-5.
7. Pannu D, Das B, Hazari P. Maternal and perinatal outcome in eclampsia and factors affecting the outcome: a study in North Indian population. *Int J Reprod Contracept Obstet Gynecol*. (2014); 3(2): 347-351.
8. Giordano JC, Parpinelli MA, Cecatti JG, Haddad SM, Costa ML, Surita FG, et al. (2014) The Burden of Eclampsia: Results from a Multicenter Study on Surveillance of Severe Maternal Morbidity in Brazil. *PLoS ONE* 9(5): e97401. doi:10.1371/journal.pone.0097401
9. Rowshan Akhtar, Afroza Ferdous, Syeda Nurjahan Bhuiyan. Maternal and Fetal Outcome of Eclamptic Patients in a Tertiary Hospital. *Bangladesh J Obstet Gynaecol*, 2011; Vol. 26(2): 77-80
10. Abalos E, Cuesta C, Carroli G, Qureshi Z, Widmer M, Vogel JP, Souza JP, on

- behalf of the WHO Multicountry Survey on Maternal and Newborn Health Research Network. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG* 2014; 121(Suppl. 1): 14–24.
11. Aisha Abdullah, Altaf Ahmed Shaikh, BahawaldinJamro Maternal and perinatal outcome associated with eclampsia in a teaching hospital, Sukkur. *Rawal Medical Journal*, 2010; 35(1).
 12. Agida ET, Adeka BI, Jibril KA. Pregnancy outcome in eclamptics at the University of Abuja Teaching Hospital, Gwagwalada, Abuja: A 3 year review. *Niger J Clin Pract.* 2010; 13(4): 394-98.
 13. Rajasri G. Yaliwal, P.B. Jaju, M. Vanishree. Eclampsia and perinatal outcome: a retrospective study in a teaching hospital. *Journal of Clinical and Diagnostic Research [serial online]* 2011 October [cited: 2015 Aug 7]; 5:1056-1059.
 14. Sibai B.M., el-Nazer A., Gonzalez-Ruiz A. Severe preeclampsia-eclampsia in young primigravid women: subsequent pregnancy outcome and remote prognosis. *Am J Obstet Gynecol.* 1986;155:1011–1016.
 15. Urassa DP1, Carlstedt A, Nyström L, Massawe SN, Lindmark G. Eclampsia in Dar es Salaam, Tanzania -- incidence, outcome, and the role of antenatal care. *Acta Obstet Gynecol Scand.* 06; 85(5): 571-8.
 16. The reproductive and child health programme. Mwanza: Bugando medical Center 2008.
 17. Innocent O. George, Israel Jeremiah. Perinatal Outcome of Babies Delivered to Eclamptic Mothers: A Prospective Study from a Nigerian Tertiary Hospital. *International Journal of Biomedical Science*, 2009; 5(4):390-394.
 18. Altman D, Carroli G, Duley L, Farrell B, Moodley J, Neilson J, Smith D; Magpie Trial Collaboration Group. Do women with pre-eclampsia, and their babies, benefit from magnesium sulphate? The Magpie Trial: a randomised placebo-controlled trial. *Lancet.* 2002 Jun 1; 359(9321):1877-90.
 19. Dutta MR, Pant L, Kabiraj M, Basu SB. Magnesium sulphate in eclampsia: A safe, efficient and cost effective approach. *J Obstet GynecolInd.*2002;52(3):65–68
 20. Yu VY1. Global, regional and national perinatal and neonatal mortality. *J Perinat Med.* 2003;31(5):376-9.
 21. Anupama Dave, LaxmiMaru, JyotiJharia. Preeclampsia and eclampsia-still an enigma. *Indian J perinatology and Reproductive Biology.*2014;4(2):12-15.
 22. Ghulmiyyah L1, Sibai B. Maternal mortality from preeclampsia/eclampsia. *SeminPerinatol.* 2012 Feb;36(1):56-9. doi: 10.1053/j.semperi.2011.09.011.
 23. SusmitaDash, S.Sherin,Gangadharsahoo. Maternal mortality –magnitude of the problem and its prevention at V.S.S.M.C.H, Burla. *Indian journal of perinatology and Reproductive biology*, vol1,no.2, March 2011,8-11.
 24. BediN,Kambo I, Dhillon BS, Saxena BN, Singh P. Maternal deaths in India-preventable tragedies. (An ICMR task force study). *J Obstet Gynaecol Ind.*2001; 51:86.
 25. Cunningham F.G., Fernandez C.O., Hernandez Blindness associated with preeclampsia and eclampsia. *Am J Obstet Gynecol* 172:1291, 1995.
 26. Moseman CP, Shelton S. Permanent blindness as a complication of pregnancy induced hypertension. *Obstet Gynecol.* 2002 Nov; 100:943-5.
 27. Lara-Tore E, Lee MS, Wolf MA, et al: Bilateral retinal occlusion progressing to long lasting blindness in severe preeclampsia and eclampsia. *Obstet Gynecol* 100:940.2002.