International Journal of Biomedical Research
ISSN: 0976-9633 (Online); 2455-0566 (Print)
Journal DOI: https://doi.org/10.7439/ijbr
CODEN: IJBRFA

Original Research Article

Factors affecting maternal outcome in antepartum eclampsia in BRD Medical College, Gorakhpur

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***Article History:**
Received: 22/09/2017
Revised: 26/09/2017
Accepted: 26/09/2017
DOI: https://doi.org/10.7439/ijbr.v8i9.4403

Abstract

Background: Eclampsia is still prevalent in India with high maternal mortality.
Aim: To analyse the factors affecting maternal outcome in antepartum eclampsia in BRD Medical College, Gorakhpur.
Method: The present observational prospective study was undertaken in the Department of Obstetrics and Gynecology, BRD Medical College, Gorakhpur from August 2015 to July 2016. Women who presented with antepartum eclampsia were included in the study. Data analysed included various maternal parameters and the outcome of pregnancy.
Results: During the defined period, incidence of antepartum eclampsia was 8.9%. Maternal death occurred in 3.7% of patients. Maternal outcome was significantly affected by numbers of convulsions, convulsion delivery interval, raised systolic and diastolic blood pressures and degree of proteinuria. However, age, parity and religion were not found to have any effect on maternal outcome.
Conclusion: Better antenatal care, early recognition of disease, timely referral, and early initiation of treatment and termination of pregnancy improves outcome of eclampsia patients. Management of eclamptic patient should be performed at tertiary care centres, where ICU facilities, NICU facilities and multidisciplinary units are available.
Keywords: Eclampsia, maternal mortality, incidence, maternal outcome.

1. Introduction

Eclampsia is an unpredictable yet preventable multiorgan disease unique to pregnancy. It is defined as new onset of grand mal seizure activity and/or unexplained coma during pregnancy or postpartum in a woman with signs or symptoms of preeclampsia [1]. It is a major cause of maternal mortality and morbidity in the developing world. It is responsible for 12% of global maternal deaths [2]. In developed world the incidence of eclampsia is on declining trend due to availability of standard healthcare facilities to all pregnant women. The estimated incidence of eclampsia in Western countries is 1 in 2000-3448 deliveries [3]. In India, reported incidence of eclampsia varies from 0.179 to 5%, the average being 1.5% [4]. And maternal mortality varies from 2.2 to 23% of all eclamptic women [5-7]. Eclampsia is preceded by alarming symptoms and signs of preeclampsia. Though not all cases, but majority of eclampsia cases can be prevented by early detection and effective treatment of preeclampsia, for which good antenatal services are needed [8].

The current study aimed to determine the factors affecting maternal outcome and in antepartum eclampsia so that preventive measures could be suggested.

2. Material and methods

This prospective observational study was carried out in the department of Obstetrics and Gynecology, BRD Medical College, Gorakhpur over a period from August 2015 to July 2016. Women with antepartum eclampsia after 20 weeks of gestational age were included in the study. Women with postpartum eclampsia, neurological disorders (epilepsy), chronic hypertension, thyrotoxicosis, systemic lupus erythematosus, malaria, diabetes mellitus, hepatic and

cardiac diseases were excluded from the study. All women were evaluated for sociodemographic profile, antenatal history (gestational age, number of convulsion, history of raised blood pressure, proteinuria, swelling of feet, headache, epigastric pain, visual disturbances, vomiting, urinary problems or bleeding per vaginum), obstetric history, menstrual history, medical and surgical history. A thorough general, physical, systemic, obstetrical and vaginal examination was performed. Women with antepartum eclampsia were given Pritchard's regime of Magnesium sulphate with termination of pregnancy. Mode of delivery was decided according to bishop's score, patient's condition and fetal condition. After delivery patients were monitored for any complication up to discharge and followed up to 6 weeks postpartum. All the information was recorded on a predesigned Performa. Laboratory investigations included Blood group and Rh factor, complete blood examination, platelet count, serum electrolyte, renal function test, liver function test, complete urine analysis, 24 hours urine protein, ultrasonography and fundoscopy.

An informed consent was taken from every participant or attendant (in case patient was unconscious) and the study was ethically approved by Institutional ethical committee.

2.1 Statistical Methods

Data analysis was done by using Chi square test and $P< 0.05$ was considered significant.

3. Results

3.1 Incidence and social demographic characteristics

There were 189 women who presented with antepartum eclampsia out of 2125 deliveries during the study period, yielding an incidence of 8.9%. The mean age of eclamptic patients was 24.5 ± 3 years (ranging from 15 to 40 years) and the majority of these patients were primiparous. 81% of cases were illiterate, 11% had primary education and 8% had secondary education. Most of them were Hindus (84%) while 16% belonged to Muslim and other religion. 87% cases were from rural area and 13% were from urban area (Table 1).

Table 1: Sociodemographic profile

Variables		No. of Patients	Percentage
Age (years)	15-20	25	13
	21-25	115	61
	26-30	38	20
	>30	11	6
Parity	Primigravida	133	70
	Multigravida	56	30
Education	Illiterate	153	81
	Primary	21	11
	Secondary	14	8
Religion	Hindu	158	84
	Muslim	31	16
Domicile	Rural	164	87
	Urban	25	13

Of the 189 patients, 161 were unbooked cases and 28 were booked cases. Surprisingly 85% of the women had received no antenatal care before the onset of convulsion. 158 cases were referred from other hospitals while 31 cases were unreferred. Most of the patients, who attended antenatal clinic, did not have their blood pressure and urine protein checked. 56% patients presented with antepartum eclampsia before term while 44% presented at term. 42.3% patients delivered vaginally where as 55.6% delivered by cesarean section. Caesarean section (CS) was done mainly for obstetrical indications. Four patients underwent cesarean due to failed induction of labour (Table 2). Headache (81%) was the most common preceding symptom seen in antepartum eclampsia (Figure 1).

Table 2: Background characteristics of antenatal eclamptic patients

Variables		No. of Patients	Percentage (%)
Booking status	Booked	28	14.82
	Unbooked	161	85.18
No. of visits	None	161	85
	1-2	25	13
	≥3	3	2
Antenatal Blood pressure	Checked	18	64.3
	Not checked	10	37.7
Antenatal Proteinuria	Checked	6	21.43
	Not checked	22	78.57
Gestational age on admission	< 37 wks	106	56
	> 37 wks	83	44
Patient admitted from	Home	31	16
	Referred from other hospital	158	84
Mode of delivery	Vaginal	80	42.3
	Caesarean section	105	55.6
	IOL f/b Caesarean	4	2.1

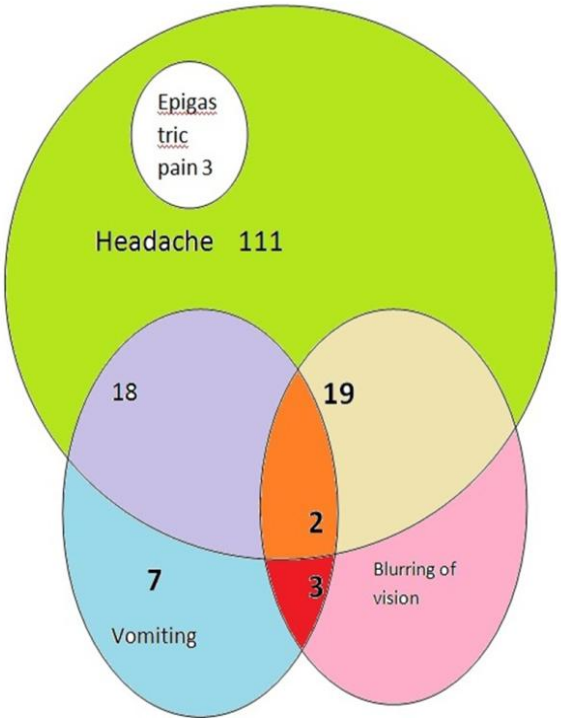

Figure 1: Distribution of patients according to preceding symptoms

3.2 Maternal outcome

There were seven maternal deaths, accounting for a case fatality rate of3.7% due to antepartum eclampsia. Most common complication observed in the current study was admission to ICU (11.64%) followed by pulmonary edema (7.94%) and acute renal failure (2.64%). Two patients developed intracranial hemorrhage diagnosed in post-delivery period on CT scan. Causes of maternal death included multi system organ failure, pulmonary edema, acute renal failure (ARF) and stroke (Table 3).

Table 3: Maternal outcome in antepartum eclampsia

Outcome	No. of Patients	Percentage (%)
Maternal outcome		
Alive	182	96.29
ICU admission	22	11.64
Pulmonary edema	15	7.94
Intracranial haemorrhage	2	1.06
Acute renal failure	5	2.64
Ventilation requirement	17	8.99
Postpartum psychosis	1	0.53
Wound gape	1	0.53
Postpartum haemorrhage	1	0.53
Maternal deaths	7	3.70

41.27 % eclamptic patients had systolic blood pressure more than 160 mm of Hg where as 22.75% had their diastolic blood pressure more than 110 mm of Hg. There were higher numbers of maternal deaths when systolic blood pressure was more than 160 mm of Hg (table 4). Proteinuria was +1 or more in 95% of patients.

Morbidity as well as mortality was more in patients who were unconscious from the beginning (P<0.05). Out of 189, only 34 patients (17.98%) could reach a tertiary care hospital within 6 hours of onset of convulsions while 81 patients (42.86%) could reach after 24 hours. Most of the women who reach late had already developed complications like pulmonary edema and ARF. Also these patients were at increased risk of mortality as compared to those reach earlier(Table 5). Maternal morbidity and mortality both increased with increase in number of convulsions (p<0.05).It was observed in the current study that onset of fit to delivery interval significantly affected maternal outcome. More than 24 hours of convulsion delivery interval(C-D interval) was associated with increased risk of developing complications. There were four maternal deaths with C-D interval more than 12 hours.

Table 4: Association between BP, Urine protein and maternal outcome

Factors	Maternal outcome				
	Uncomplicated survival (n=148)	Maternal complications (n=34)	Maternal deaths (n=7)	Total (n=189)	P value
Systolic blood pressure (mm of Hg)					
>160	54 (36.48%)	21(61.76%)	3(42.8%)	78(41.27%)	
160-140	84 (56.76%)	12(35.29%)	2(28.57%)	98(51.85%)	
<140	10 (6.76%)	1 (2.94%)	2(28.57%)	13(6.88%)	<0.05
Diastolic blood pressure (mm of Hg)					
>110	29 (19.59%)	12 (35.29%)	2(28.57%)	43(22.75%)	
90-110	110 (74.32%)	21 (61.76%)	4(57.14%)	135(71.43%)	
<90	9 (6.08%)	1 (2.94%)	1(14.28%)	11(5.82%)	>0.05
Urine protein (by dipstick)					
Negative	6 (4.05%)	2 (5.88%)	1(14.28%)	9(4.76%)	
+1	117 (79.05%)	20 (58.82%)	5(71.42%)	142(75.13%)	
+2	25 (16.89%)	12 (35.29%)	1(14.28%)	38(20.11%)	>0.05

Table 5: Clinical factors affecting maternal outcome

Factors	Maternal outcome				
	Uncomplicated survival (n=148)	Maternal complications (n=34)	Maternal deaths (n=7)	Total (n=189)	P value
Level of consciousness					
Oriented	28(18.92%)	3(8.82%)	1(14.28%)	32(16.93%)	<0.05
Disoriented	90(60.81%)	14(41.18%)	1(14.28%)	105(55.55%)	
Unconcious	30(20.27%)	17(50%)	5(71.43%)	52(27.51%)	
Number of convulsions					
<6	55(37.16%)	8(23.53%)	2(28.58%)	65(34.39%)	<0.05
06-10	71(47.97%)	11(32.35%)	3(42.86%)	85(44.97%)	
>10	22(14.86%)	15(44.12%)	2(28.58%)	39(20.63%)	
Time taken to reach health facility (hrs)					
< 6	31(20.95%)	2(5.88%)	1(14.28%)	34(17.99%)	<0.05
6-24	64(43.24%)	9(26.47%)	1(14.28%)	74(39.15%)	
>24	53(35.81%)	23(67.65%)	5(71.43%)	81(42.86%)	
Convulsion delivery interval (hrs)					
<6	42(28.38%)	7(20.59%)	1(14.28%)	50(26.45%)	=.053
7-12	67(45.27%)	10(29.41%)	2(28.58%)	79(41.79%)	
>12	39(26.35%)	17(50%)	4(57.14%)	60(31.74%)	
Admission delivery interval (hrs)					
<4	106(71.62%)	28(82.35%)	5(71.43%)	139(73.54%)	>0.05
5-12	32(21.62%)	5(14.71%)	1(14.28%)	38(20.10%)	
>12	10(6.76%)	1(2.94%)	1(14.28%)	12(6.35%)	

4. Discussion

The incidence of antepartum eclampsia in the present study was 8.9%. The incidence in our study was higher than not only that of developed countries but also that of most developing countries as well as the incidence reported in other parts of the India. The higher incidence in the present study was due to lack of proper antenatal care and also because the study was undertaken in a referral hospital dealing with a nearly 15 districts around Gorakhpur. Moreover, in this region hypothyroidism, vitamin D deficiency and malnutrition are prevalent which may have some association with preeclampsia and eclampsia but researches are still lacking to prove it yet. The only other study which gives an incidence higher than our study is the Dhaka Medical College and Hospital Bangladesh which is the largest tertiary referral government hospital in Bangladesh and deals mostly with referral cases, where the incidence of eclampsia is 9% [9].

4.1 Maternal age and parity

Eclampsia is a disease of young and nulliparous women. In this series, 61% of victims belonged to 21 to 25 years age group and 70% were primigravida. This was in accordance to the study done by Sunita TH *et al* (85% and 79%) [10].

4.2 Education

In the present study most of the eclamptic women (81%) were illiterate, not knowing even their last menstrual period. They were unaware of the consequences which may occur due to lack of antenatal care. Hence, there is a great need for improved health education as most cases of eclampsia were due to ignorance and neglect.

4.3 Antenatal care

Our study proved that inadequate antenatal care was a major contribution to the poor outcome of eclamptic patients. 85.18% patients were unbooked and did not receive any antenatal care. However, 15% of the pregnant women who were seen by the doctor before the onset of fit, BP and proteinuria was not checked in all. Failure to screen for preeclampsia by basic modalities like BP and urine protein reflect the lack of access to basic equipments such as sphygmomanometers and urine dipsticks in Peripheral Health Care Centers. 84% patients were referred from other hospitals. Inadequate management given at the peripheral centers contributed to the poor maternal outcome.

4.4 Preceding symptoms

Most of the patients (81%) had headache as the preceding symptom with or without associated vomiting or blurring of vision. But it was passed unnoticed in majority of patients due to lack of knowledge. Similar ratio was found by Bhalerao A *et al* [11].

4.5 Hypertension and Proteinuria

In the present study 93% patients were hypertensive and 95%had proteinuria. Maximum maternal mortality was found when the blood pressure was above 160/110 mm of Hg. According to Chesley *et al*, the systolic blood pressure of more than 200 mm of Hg is included in Eden's criteria to denote the severity of eclampsia and mortality increases with severity of eclampsia [12].

4.6 Number of convulsion

This study showed statistically significant correlation with maternal mortality and the number of convulsions. Similar results were of observed by Swain *et al* [8].

4.7 Time taken to reach adequate healthcare facility

Delay in presentation to the hospital definitely adds to maternal morbidity and mortality. Delayed referral, poor transport facilities added to the time taken to reach adequate health facilities. Patients who reached after 24 hours of onset of fit had increased risk of morbidity as well as mortality in comparison to patients who reached within 6 hours ($P<0.05$). These finding were in accordance to the study performed by Pannu *et al* [13].

4.8 Convulsion delivery interval

In the present study, convulsion onset delivery interval was directly proportional to the maternal mortality. Results were comparable to Nanda S *et al* [14] and Swain S *et al* [8].

4.9 Recurrence of convulsion

All our patients received Magnesium sulphate as per Pritchard's regimen to prevent convulsions. Only three patients had recurrence of convulsion while on Magnesium sulphate regimen. Recurrence of fits increases the maternal morbidity.

4.10 Mode of delivery

There is no general consensus to the mode of delivery in the eclampsia. Menon *et al* [15] and Worley *et al* [16] recommended vaginal delivery in eclampsia reserving CS only for obstetrical reasons. Contrary to this, Pritchard[17] and Chesley[12] have favoured CS to reduce the maternal and perinatal mortality.

4.11 Maternal Mortality

Case fatality rate observed in the current study was 3.7% similar to that reported from Eastern India (4.4%)[18]. However, the case fatality rate was much higher than reported from developed countries (0.5% to 1.8%)[3,19,20]. The high mortality rate in our series was probably due to late arrival of the patients and many in the moribund condition. So, proper control of convulsions and blood pressure before and during shifting the patient to higher centre may improve outcome in these patients.

4.12 Demerits and merits of the study

The current study was done over a short period of time involving small sample size of antepartum eclampsia only, leaving behind postpartum eclamptic women. Future studies should be done in large cohorts so that significant outcome could be derived and effective preventive measures can be implemented. An attempt is made here to project the high incidence of eclampsia in Eastern Uttar Pradesh which is much higher as compared to the National reported data. It is a humble endeavor to emphasize the fact that eclampsia is still killing women at the prime of their age. Hoping coordinated efforts of government, non-government organizations, medical and paramedical staff and close involvement of community to fight against this dreadful disease.

5. Conclusion

Antepartum eclampsia is one of the most challenging and unsolved problem in Indian obstetrics. It is concluded that poor antenatal attendance, inadequate antenatal care, delay in seeking help, delay in diagnosis, inadequate management of eclampsia patient at the peripheral center and delay in referral are major contributors to the poor outcome of eclamptic women. By providing better health care facilities at all level, improving socioeconomic and education status of females, standard ANC, early identification of high risk cases and timely intervention will improve fetomaternal outcome in eclampsia.

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