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Research Article

Evaluation of factors influencing maternal and fetal outcome in eclampsia in a tertiary care hospital

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ABSTRACT

Background: Eclampsia is a major cause of maternal morbidity and mortality in developing countries. Evaluation of factors contributing to occurrence of eclampsia and death of eclamptic mother is of paramount importance.
Methods: A retrospective study of two years period was done in Assam Medical College, Dibrugarh. Pregnant woman diagnosed as eclampsia during this period were included. The events and outcome of mother and fetus were recorded and analysed.
Results: During this two years period the total number of deliveries were 19150, total maternal death 180, eclampsia case 406 and maternal death due to eclampsia was 29. The incidence of eclampsia was 2.12%, case fatality rate 7.14%, stillbirth 16.29% and caesarean delivery in eclamptic mother was 30%. Pulmonary edema (34.48%) and anaemic heart failure (27.58%) were responsible for majority of the maternal death.
Conclusions: Eclampsia is still a major cause of maternal death. Occurrence of eclampsia can be reduced by optimizing antenatal care of pregnant woman of low socioeconomic class. Improvement in capacity of intensive care unit and blood bank are essential prerequisite to reduce maternal death due to eclamptic mother.

Keywords: Eclampsia, Maternal death, India

INTRODUCTION

Eclampsia is the occurrence of convulsion in a pregnant woman with preeclampsia. Eclampsia is a preventable complication of preeclampsia. Incidence of eclampsia varies between developing countries and developed countries. Though rare in developed countries incidence of eclampsia is not uncommon in India. Maternal death associated with hypertensive disorder of pregnancy contributes 10% of maternal death (Khan KS 2006 WHO).[1] Eclampsia is still a major cause of maternal death in India (24.09%, FOGSI study).[2] A number of complications associated with eclampsia is responsible for high rate of maternal death in eclampsia.[3-5] It is essential to know the sociodemographic background of women suffering from eclampsia, complication associated with eclampsia and factors influencing maternal and fetal outcome in order to formulate effective strategy for reducing the number of cases of eclampsia and for improving outcome of mother and foetuses in eclampsia.

The objectives of this study were as following.

1. To measure the incidence of eclampsia.
2. To evaluate the maternal outcome.
3. To document and analyse the sociodemographic background of eclamptic women.

METHODS

Source of data

This retrospective study was carried out in woman with eclampsia in the department of Obstetrics and Gynaecology, Assam Medical College, Dibrugarh, India.

Settings

Assam Medical College, Dibrugarh, India

Study period

The period of this study was from January 2013 to December 2014.

Study design

It was a retrospective clinical study

Patient selection

Inclusion criteria

All cases of pregnant woman diagnosed as eclampsia at admission or who developed eclampsia during stay at hospital were included.

Exclusion criteria

1. The pregnant woman with known seizure disorders were excluded from study population.
2. Patients with onset of convulsion after 10 days of delivery were excluded.

Data were collected from records of labour room and Caesarean section operation theatre.

Operational definition

Booked Case

Woman were labelled as booked case if she had minimum 4 antenatal check up by any health worker as per WHO guidelines.

Pre-referral management

Pre-referral management was considered adequate if patient received anticonvulsant magnesium sulphate before referral.

Magnesium sulphate was used to control convulsion as per Pritchard regimen in all cases.

Outcome measures

Maternal outcome

Maternal death and major complications.

Fetal outcome

Livebirth, Stillbirth.

Statistical analysis

Data were presented in terms of percentage and chi square test was applied for testing the significance.

RESULTS

During the study period the total number of deliveries was 19150 and total number of eclampsia 406. So the incidence of eclampsia was 2.12%.

The age group of 15-20 years (41.6%) was the largest group. Significantly more eclamptic woman were in this age group (P <0.01).The number of eclampsia in booked cases 177 (43.59%) was significantly less than unbooked cases 229 (56.40%) (P <0.01).

Table 1: Age group distribution.

Age group	2013	2014	Total (%)
15-20 years	98	71	169 (41.62%)
21-25 years	95	57	152 (37.43%)
26-30 years	25	50	75 (18.47%)
31-35 years	5	2	7 (1.72%)
35-40 years	1	2	3 (0.73)
Total	224	182	406

The maximum number of patient was primigravidae 338 (83.25%).

The number of cases of antepartum eclampsia was 355 (87.43%), intrapartum eclampsia 49 (12%) and postpartum eclampsia 2 (0.49%).

Most of the woman had vaginal deliveries 279 (69.92%). Caesarean delivery was conducted in 120 (30.07%) women and 7 women remain undelivered.

The total maternal death in the study period was 180 and the maternal death due to eclampsia was 29. Thus eclampsia contributed 16.11% maternal death. The case fatality rate (CFR) was 7.14%.

The cause of maternal death was pulmonary oedema /aspiration in 13 (44.8%) cases, anaemic heart failure 8 (27.5%), Cerebrovascular accident (CVA) 4 (13.7%), septicaemia 2 (6.8%) and Acute renal failure (ARF) 2 (6.8%) cases.

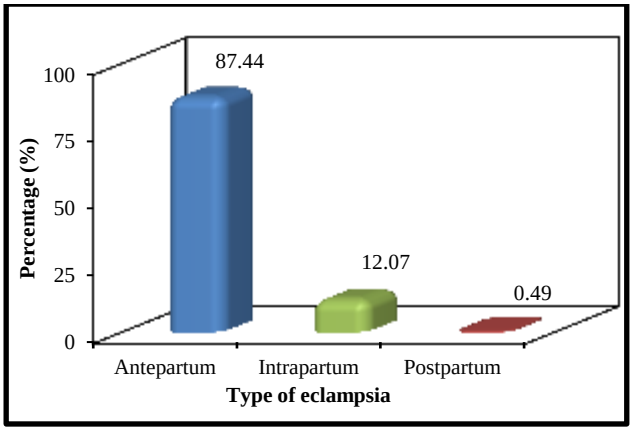

Figure 1: Type of eclampsia.

Table 2: Cause of death.

Cause of death	2013	2014	Total (%)
Pulmonary edema	6	4	10 (34.48%)
Anaemic heart failure	2	6	8 (27.58%)
Cerebrovascular accident	4	0	4 (13.79%)
Aspiration	1	2	3 (10.34%)
Acute renal failure	1	1	2 (6.89%)
Septicemia	1	1	2 (6.89%)
Total	15	14	29 (100%)

The number of livebirth was 334 (83.70%) and stillbirth 65 (16.29%).

DISCUSSION

Incidence

The incidence was found to be 2.12% (212/10000) which is similar to study reported by Majhi AK (2.79%) and Das R, 2.627% but much higher than developed countries.[6,7] The incidence in UK is 4.9/10000, Canada 5.9 per 10000 and Netherlands 6.2/10000.[3,4,8]

Gravidity

Maximum number of woman were primigravidae (87.44%) in our study which is similar to study by Sarma HK (85%).[9]

Age

The age group of 15-20 years was the largest group (41.62%) of eclamptic woman and 21-25 years age group was second (37.43%) whereas Agida reported that 20-24 years age group was the largest 34.8% and 25-29years was second 26.1%.[9] Liu S reported maximum number of eclampsia in the 20-24 years age group (18.1/10000) and second group ≥40 years 11.4/10000.[4] The practice of teen age marriage may be the reason for this young age group contributing the largest number of patients. Teen age pregnancies have higher risk of complication. The age of 79% of woman with eclampsia was 25 years or less.

Antenatal care

In the present study the number of booked case was (43.6%). Edgar M, reported 96% cases as booked[11]. Douglas KA reported 70% cases of eclampsia had antenatal care[3]. This indicates lack of desired impact of antenatal visit/care on occurrence of eclampsia. Thus the inadequacy of content of antenatal care or inadequate number of antenatal visit in the crucial period of third trimester of pregnancy is reflected. Creating awareness and educating about danger of high blood pressure and danger signs of preeclampsia will help in reducing occurrence of eclampsia.

Type of eclampsia

The number of cases of antepartum eclampsia was maximum (87.44%). Douglas KA reported antepartum eclampsia 38%, intrapartum 18% and postpartum 44%. Study of Vijayasree M et al found antepartum eclampsia (71%) cases as the largest group.[12]

Adequacy of referral

Most of the patients presented to our hospital without receiving anticonvulsant drugs ($MgSO_4$). Similar observation was made by Pannu D.[13] As the number of convulsion increases maternal as well as fetal mortality and morbidity increases. Patients must receive anticonvulsant drugs before referral to prevent recurrence of convulsion during highly vulnerable period of transportation.

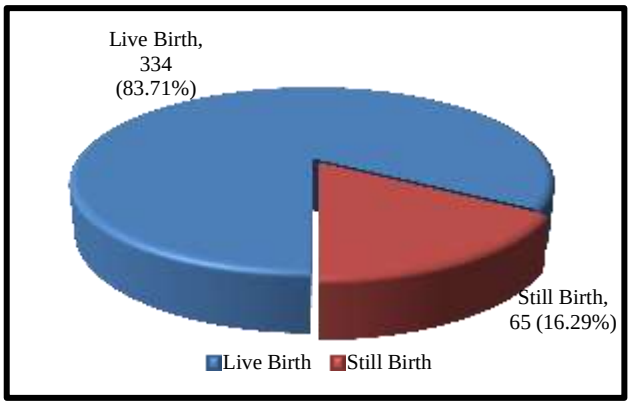

Figure 2: Livebirth and stillbirth.

Stillbirth

The stillbirth found in the present study was 16.29% (65) which is similar to study reported by Agida (17.4%), Pannu D (18.85%) and Edgar M (12.2%).[10,11,13] Study of Liu S reported fetal death 10.8 /1000.[4] The maximum

number of stillbirth was due to intrauterine fetal death (IUFD) taking place before admission to hospital.

Caesarean deliveries

The number of woman delivered by caesarean section was 110 (30.07%) which is similar to Nwobodo (26.5%) but much lower than reported by Agida et al (84.8%).[10,14] The lower rate of caesarean section operation is due to higher surgical or anaesthetic risk of eclamptic woman. Eclamptic woman with critical condition like pulmonary edema with or without severe anaemia or unconscious make them unfit for caesarean operation.

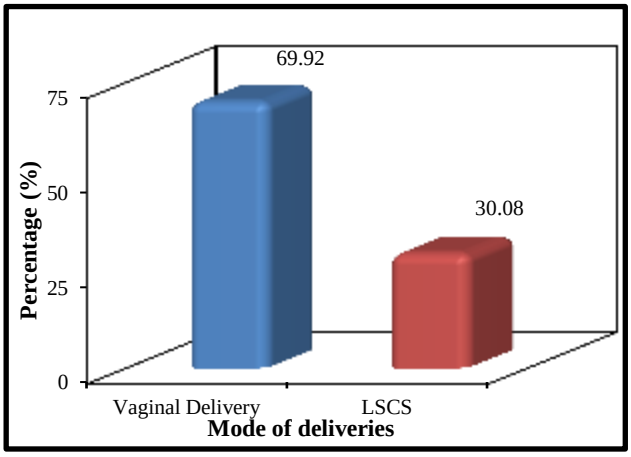

Figure 3: Mode of deliveries.

Maternal death

Globally hypertensive disorder of pregnancy contribute 10% of maternal death whereas in our study it was found that eclampsia alone is contributing 16.11% of maternal death.[1] Other studies have shown much higher percentage (48.76%,43.35%,45.36%).[6,7,15]

Pulmonary edema (34.48%)/aspiration (10.34%) and anaemic heart failure (27.58%) were cause of death in 73% maternal death. These 73% cases can only be properly managed with ventilatory support in ICU (Intensive care unit) and adequate supply of blood or blood component.

The number of woman dying within 24 hours of admission was 17 (51.62%). Olopade reported 85.7% and Das 88.46% of the eclamptic deaths occurring within 24 hours of hospital admission.[7,16] This indicates late arrival at tertiary care hospital or inadequate provision of supportive care at the referral hospital.

Pulmonary edema (10/17, 58.8%) and anaemic heart failure (5/17, 29.4%) was together responsible in 88.2% cases of maternal death within 24 hours of admission in hospital.

Severe anaemia was found to be a major cause of maternal death (29.4%) in the study. Death of these women could have been averted by correction of anaemia during antenatal period by oral or injectable iron.

Case fatality rate (CFR) was 7.14% which is similar to reported by Adiga et al but higher than reported by Sarkar M et al (4.96%).

The factors responsible for high maternal death or CFR was late arrival in tertiary care hospital, moribund condition of the patients at the time of admission, lack of provision of ICU facility in adequate number and non-availability of blood or blood component in sufficient quantity.

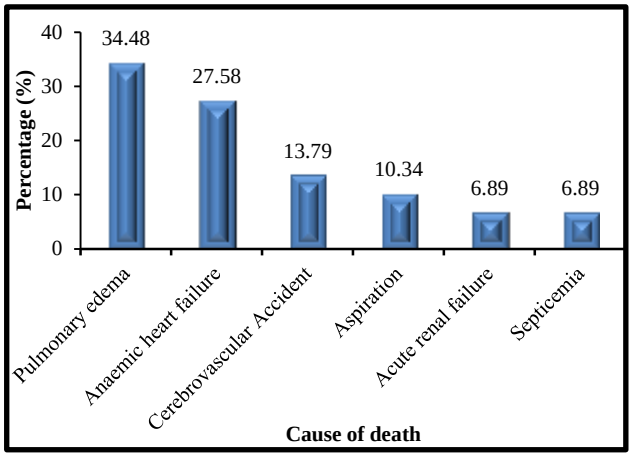

Figure 4: Cause of death.

CONCLUSIONS

Eclampsia is a major cause of maternal death in India. To reduce the maternal mortality due to eclampsia there must be primary as well as secondary prevention. The occurrence of eclampsia can be reduced by early diagnosis and treatment of preeclampsia through adequate antenatal care. As the most of the women are from low socioeconomic condition, strategy needs to be developed to optimise antenatal care of this group of women. The tertiary level care hospital where these cases are treated need to have ICU facility with provision of sufficient number of bed. Blood bank must have enough blood or blood component to meet the need of these eclamptic mothers. We hope to achieve better outcome with these measures.

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