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Original Research Article

Role of antenatal care in reducing incidence of eclampsia in eastern Uttar Pradesh, India

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ABSTRACT

Background: Eclampsia is characterized by sudden onset of generalized tonic-clonic convulsions or coma in pregnancy or postpartum. It is a major cause of maternal and perinatal morbidity and mortality in developing countries. This study was conducted to determine the incidence of eclampsia and role of antenatal care in reducing the incidence.

Methods: This was a prospective study (July 2015-June 2016) conducted in labour room of department of obstetrics and Gynecology, BRD Medical college, Gorakhpur, Uttar Pradesh, India. A total no. of 141 women presenting with eclampsia were included in the study. Risk factors like antenatal care and sociodemographic status were studied for their role in increased incidence of eclampsia.

Results: There were 141 eclampsia cases out of 3536 deliveries, during the study period. The incidence of eclampsia was found to be 4%. Out of 141 eclampsia cases 35.5% did not receive any antenatal care. 56.7% received substandard care in less than 4 antenatal visits. Out of those who received antenatal care (91/141), 67% received irregular, substandard care in primary health centre of their locality. Majority of eclampsia cases were between 16-25 years of age (85.1%) and were primigravida (62.4%). Majority of eclampsia cases were uneducated (89.4%), of lower socioeconomic status (71.4%) and belonged to rural area (67.4%).

Conclusions: High incidence of eclampsia in B.R.D. Medical College reflects the status of eclampsia in eastern Uttar Pradesh, India. To prevent eclampsia our health care centres should be strengthened by well trained medical officers, other health care workers and adequate antenatal care facilities.

Keywords: Antenatal care, Eclampsia, Preeclampsia

INTRODUCTION

Eclampsia is an extremely severe form of preeclampsia. It is characterized by sudden onset of generalized tonic-clonic convulsions or coma in pregnancy or postpartum, unrelated to other cerebral conditions in patients with signs and symptoms of preeclampsia.¹ According to revised definition, Preeclampsia is hypertension after 20 weeks of gestation with one or more of the following: proteinuria, maternal organ dysfunction including renal, hepatic, hematological or neurological complications or

foetal growth restriction.² Eclampsia can manifest itself in unusual and unpredictable manner in well monitored patients without risk factors. The diagnosis must be made quickly for taking urgent and appropriate obstetric management.³ Almost all cases (91%) of eclampsia develop at or beyond 28 weeks.⁴ Eclampsia occurring before the 20th week of gestation has usually been reported with molar or hydropic degeneration of the placenta, with or without a coexistent fetus.^{5,6} It can occur during antepartum (38-53%), intrapartum (18-36%) or in post partum period (11-44%).^{4,7,8} Approximately 1 in

2000 deliveries (0.05%) is complicated by eclampsia in developed countries, whereas the incidence in developing countries varies from 1 in 100 to 1 in 1700 cases.^{7,9} The rate of preeclampsia and eclampsia is higher in the developing countries because of absent prenatal care and lack of access to proper hospital care.¹⁰ In India reported incidence of eclampsia varies from 0.179 to 3.7%.¹⁰⁻¹² According to WHO report 2008 eclampsia accounts for 12% of all maternal deaths in developing countries.¹³ Maternal mortality in eclampsia is very high in India and varies from 2-30%, much more in rural hospitals than in urban counterpart.¹⁴ Hypertensive disease in pregnancy complicated by Preeclampsia/ eclampsia requires proper antenatal care, early recognition and referral, adequate treatment and timely delivery.¹⁵ Clear protocols for management of hypertension in pregnancy at all levels of health care are required for better maternal as well as perinatal outcome.¹⁵

The present study was conducted in B.R.D Medical College, Gorakhpur, to know the incidence of eclampsia and role of antenatal care along with sociodemographic variables in reducing incidence of eclampsia in eastern Uttar Pradesh.

METHODS

This prospective clinical study was conducted over a period of one year from July 2015 to June 2016, in the labour room of department of obstetrics and gynaecology of Baba Raghav Das (B.R.D) Medical College, Gorakhpur, Uttar Pradesh, India. A total no. of 141 women presenting with eclampsia were included in the study. At the time of admission of eclampsia patients, Proper history was taken from her guardian regarding age, parity, residence, nearby health care centres, distance from our institution, education, living status, no of antenatal visits, awareness about preeclampsia/eclampsia, and facilities at health care centres like B.P. monitoring, urine analysis etc. Complete clinical examination including general and obstetric was done. Eclampsia patients were managed according to the hospital protocol for eclampsia management, by judicious use of antihypertensive (labetalol), anticonvulsant (magnesium sulphate) etc. and obstetric interference in the form of induction of labour or caesarean section. Data were analyzed for incidence, antenatal care and sociodemographic variables.

Operational definitions

Eclampsia- Women with gestational age >20 weeks, BP more than or equal to 140/90 mm of hg with convulsions or coma with either urine protein $\geq +1$ or thrombocytopenia (<100000 /micro litre), impaired liver functions (liver enzymes raised to twice normal concentration), renal insufficiency (serum creatinine >1.1 /dl), pulmonary oedema, new onset cerebral or visual disturbances.

Regular antenatal care- At least 4 or more check up by an authorized service provider.

Irregular antenatal care- Less than 4 antenatal check-up by an authorized service provider. No antenatal care- Total absence of antenatal check up.

Standard antenatal care- >8 antenatal care with regular BP monitoring and urine analysis for protein with use of magnesium sulphate for severe preeclampsia, imminent eclampsia and eclampsia.

Socioeconomic status (SES)- SES was categorised based on Kuppuswamy's socioeconomic scale (2012), into Upper, Upper Middle, Lower Middle, Upper Lower and Lower Socioeconomic class..

RESULTS

During the study period (July 2015-June 2016), 141 eclampsia cases found among 3536 deliveries. The incidence of eclampsia was 4% of the total deliveries in our study (Figure 1).

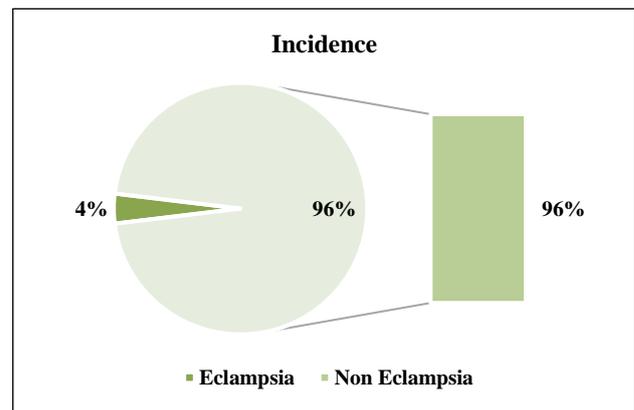


Figure 1: Incidence of eclampsia in present study (July 2015-June 2016).

Table 1: Number of antenatal visits in eclampsia cases.

No of antenatal visits	Eclampsia cases (no.)	Percentage (%)
0	50	35.5%
1-<4	80	56.7%
≥ 4	11	7.8%

Table 2: Health care centres used for antenatal care.

Health care centre	Eclampsia cases (no.)	Percentage (%)
Primary health care	61	67%
Secondary health care	29	31.9%
Tertiary health care	01	1.1%

Out of 141 eclampsia cases, 50 (35.5%) patients had no antenatal care. 80 cases (56.7%) had inadequate care i.e. less than 4 antenatal visits. Only 11 cases (7.8%) received antenatal care more than 4 times (Table 1). It shows that majority of eclampsia patients received inadequate antenatal care followed by those who didn't receive any antenatal care. Out of those who received antenatal care (91/141), most of them 61 (67%) had their antenatal care at primary health centre. 29 (31.9%) received antenatal care at secondary health care centre. Only 1 patient received antenatal care at tertiary care centre (Table 2). In our study 61 (43.3%) eclampsia cases were in the age group 16-20 years, 59 (41.8%) were between 21-25 years of age. 16 cases (11.4%) were between 26-30 years and only 5 cases (3.5%) were between 31-35 years of age. There was no case above 35 years of age. This study shows that majority of eclampsia patients i.e. 120/141 (85.1%) were in the younger age group between 16 to 25 years (Table 3).

Table 3: Age distribution in eclampsia cases.

Age (in years)	Eclampsia cases (no.)	%
16-20	61	43.3
21-25	59	41.8
26-30	16	11.4
31-35	05	3.5

Table 4: Parity distribution in eclampsia cases.

Parity (no.)	Eclampsia cases (no.)	%
0	88	62.4
1-4	46	32.6
>=5	07	4.96

Table 5: Sociodemographic variables in eclampsia.

Variables	Eclampsia cases (no.)	%
Demography		
Rural	95	67.4
Urban	46	32.6
Educational status		
Educated	15	10.6
Uneducated	126	89.4
Socioeconomic status		
Upper	0	0
Upper middle	2	1.4
Lower middle	2	1.4
Upper lower	37	26.2
Lower	100	71

Most of the eclampsia patients i.e. 88/141 (62.4%) were primigravida, 46 (32.6%) patients were multigravida and only 7 (4.96%) were grand multipara (Table 4). Majority of eclampsia patients, 95/141 (67.4%) belonged to rural area, 46 (32.6%) belonged to urban area. Most eclampsia patients 126/141 (89.4%) were uneducated. In this study majority of patients (71%) belonged to lower

socioeconomic class according to Kuppaswamy socioeconomic scale. 37 cases (26.2%) were from upper lower socioeconomic status. No eclampsia patient belonged to upper class.

Table 6: Incidence of eclampsia in various studies.

Study	Place of study	Incidence
Douglas KA et al ⁷	United Kingdom	0.05%
Shaikh SB et al ¹⁶	Andhrapradesh, India	0.58%
Sunita TH et al ¹⁷	Karnataka, India	0.7%
Manjusha S et al ¹⁸	Maharashtra, India	1.63%
Singh S et al ¹⁹	Orissa, India	3.2%
Babbar K et al ²⁰	Bilaspur, Chhattisgarh, India	3.5%
Present study	Gorakhpur, India	4.0%

DISCUSSION

Present study was conducted in the labour room of obstetrics and Gynaecology department of B.R.D. Medical college, Gorakhpur, Uttar Pradesh, India. Gorakhpur is a Tehsil/block in the Gorakhpur district of Uttar Pradesh. It comes in eastern Uttar Pradesh (Purvanchal). Total area of Gorakhpur is 840km² including 674.25km² rural area and 165.90km² urban areas. B.R.D. Medical College is the only tertiary care centre of eastern Uttar Pradesh. It caters patients not only from Gorakhpur district but also from surrounding districts and districts of Bihar and Nepal border. Purpose of the study is to highlight the impact of lack of antenatal care and sociodemographically associated problems, on increased incidence of eclampsia in eastern Uttar Pradesh.

In our study, the incidence of eclampsia was 4% (141/3536 deliveries) which is higher than incidence reported from other states of India. The incidence is much higher than that of developed countries like the United Kingdom, where eclampsia complicates 0.05% of total deliveries.⁷ The incidence is comparable to other studies also.^{7,16-20} (Table 6). The higher incidence in our study is because of high referral rate of eclampsia patients. Patients are referred from primary health centres, secondary health centres and also from private hospitals. However this incidence does not reflect true incidence because our data are all our hospital based. There are so many hidden eclampsia cases that died in remote rural areas without diagnosis or sometimes these eclampsia cases died on the way before reaching our tertiary care centre. To know this number, proper documentation of antenatal patients is required in each and every health care centre.

In the present study, 35.5% eclampsia patients did not receive any antenatal care Majority i.e. 56.7% received irregular and inadequate care (<4 visits) and only 7.8% received regular antenatal care (>=4). Lack of antenatal care and irregular antenatal care both are important risk

factors for increased incidence of eclampsia. This is also supported by various studies conducted in India as well as other developing countries. In a study conducted by Prabhakar G et al, 79.67% eclampsia patients did not have any antenatal care or received inadequate care with less than three antenatal visits.²¹ According to study conducted by Sunita TH et al, 45% patients had no antenatal care and around 55% patients had some sort of antenatal care.¹⁷ 93.99% patients had no ANC as per S. Jain et al and 76.66% had no ANC as per S. Swain et al.^{22,23} As per Sarma HK et al, 68.33% had history of irregular antenatal care.²⁴

In New Zealand eclampsia was a notifiable disease for many years, and its incidence declined from 32/10000 to 8/10000 between 1928-33 and 1956-8, due to the advent of routine screening for early signs of preeclampsia. The reduction in the incidence of eclampsia in the United Kingdom between the 1920s and 1970s also occurred as antenatal care became universally available.²⁵ In developed countries the incidence of eclampsia is significantly low because of uniform health care policy and comprehensive antenatal care with early detection of preeclampsia and its management.²⁶ This together with the fact that countries without effective antenatal screening programmes still have much higher incidence provides evidence in favour of standard antenatal care.

Tuffnel DJ et al, suggested that adequate antenatal care facilitates early identification of risk factors and appropriate intervention to prevent progression to eclampsia.²⁷ 7.8% eclampsia cases in our study had >4 antenatal visits despite that they develop eclampsia. The reasons were substandard antenatal care, negligence from patient side and atypical eclampsia (non-classical). WHO Secondary Analysis, 2014, found >8 antenatal visits as protective factor for preeclampsia/eclampsia when compared with 4-8 visits.²⁸

Out of those who received antenatal care (91/141), 67% received care from primary health centre, 31.9% received care from secondary health centre and only 1 patient received antenatal care from our hospital. Care below expectation in the primary health establishment is a disturbing factor as evident from report of National Eclampsia Registry that only 44% of eclampsia prevention with magnesium sulphate before admission to hospital.²⁹ Besides no of antenatal care quality of antenatal care is also important for reducing no. of eclampsia. This also indicates a severe need to train medical officers, birth attendants and paramedical personnel in remote interiors.²⁹

In our study most cases of eclampsia (85.1%) were young <25 years of age and primigravida (62.4%). This is comparable to other studies in India.^{16-18,20} High number of adolescents in our study reflect early age at marriage which renders a very young population of women at risk of morbidity & mortality. First time pregnant women is an important high risk factor as Pregnancy is a stressful

condition that could unmask several conditions because of this, first time pregnant women need regular and compulsory screening.

In Gorakhpur district, of 6.93 lakhs population 81.17% live in rural areas. In our study 67.4% eclampsia patients belonged to rural areas. This is one of the biggest reasons of substandard antenatal care and increase incidence of eclampsia in eastern Uttar Pradesh. In rural areas of eastern Uttar Pradesh, there is lack of well trained medical officers, specialist doctors, health care workers and proper medical facilities. These factors are responsible for substandard antenatal care. In our study 89.4% eclampsia patients were uneducated. The literacy of mother plays important role in developing eclampsia. This is also proven by various studies.^{20,24,28} 71% eclampsia patients belonged to lower socioeconomic status. Lack of education, low socio economic status lack of access and awareness to medical care are the important factors in development of eclampsia as quoted by various studies.^{16,17,20,24}

CONCLUSION

High incidence of eclampsia in our hospital reflects the status of eclampsia in eastern Uttar Pradesh, India. As we know eclampsia usually follows Preeclampsia, to prevent eclampsia, preeclampsia has to be prevented. To prevent eclampsia our health care centres should be strengthened by well trained medical officers, health care workers and adequate antenatal care facilities. There should be periodic training of all medical officers and health care personnel regarding proper and early management of preeclampsia/eclampsia and to handle obstetric emergencies.

Transport facilities should be there in each and every health centre. Antenatal women and their guardians should be counselled about early and regular antenatal care during pregnancy.

Awareness regarding preeclampsia/eclampsia should be created by health personnels. Antenatal women should be advised to come to the health centre immediately if any symptom of the disease arises. By using these simple measures we can reduce a heavy burden of eclampsia in our locality.

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