

Identification of Central Nervous System Complications Related To Eclampsia

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Abstract:

Background: Eclampsia is a complex hypertensive disorder of pregnancy affecting multiple systems. Central nervous system is commonly affected and is a cause of significant morbidity and mortality in women. Various neurological complications are found in eclamptic patients. **Aims and Objectives:** The aim of this study was to explore the various CNS complications related to eclampsia. **Materials and Methods:** This retrospective observational study was carried out in the 'Eclampsia ward' of Department of Gynaecology and Obstetrics of Dhaka Medical College Hospital (DMCH), during the period of November, 2010 to October, 2011 in patients admitted with a history of eclampsia. Fifty(50) patients were included in this study. Data was collected by a semi-structured questionnaire. The patients were interviewed and a complete clinical examination was performed by the investigator. It was reviewed by a consultant neurologist. **Results & conclusion:** The results revealed that patients had headache, comatose state, stroke, focal neurological deficit, post partum psychosis, aphasia and cortical blindness. Death occurred in 6.0% of patients. As eclampsia is the third major cause of pregnancy related maternal death in Bangladesh (16%), and no study has yet not been reported in this field, this study might help in formulating management plan; predict prognosis and functional recovery in the individual cases.

Introduction:

Eclampsia is one of the dreaded complications of pregnancy as it carries high morbidity and mortality to the mother and baby. The incidence of eclampsia depends on a variety of factors and varies widely from region to region.

Both the International Society for the Study of Hypertension in Pregnancy (ISSHP) and the Working group on High Blood Pressure in Pregnancy (WGHBP 1990) have recommended the following definitions. Accordingly pre-eclampsia is defined as occurrence of hypertension along with proteinuria or edema or both after 20 weeks of gestation and when convulsions or unexplained coma occur in the setting of gestational hypertension, the condition is referred to as eclampsia. In this context,

hypertension is defined as blood pressure above 140/90 mmHg (measured on two occasions, 4 h apart) and proteinuria as urinary protein excretion over 300 mg per 24 h (~30 mg/dl on random sample or e" 1+ on dipstick). It is more common in developing countries because illiteracy, lack of health awareness and education, poverty, and superstitious beliefs prevent women from seeking medical advice during pregnancy^{1,2}.

The incidence of eclampsia is high in Bangladesh- 7.9% (not including pre-eclampsia), according to the results of a house-to-house survey³.

A neurological complication is defined as any manifestation secondary to neuronal dysfunction in patients with eclampsia. Common symptoms include

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headache, blurring of vision, aphasia, facial nerve palsy, cerebrovascular accident, transient ischaemic attack, cerebral edema, comatose state, postpartum psychosis, cortical blindness, transient blindness, retinal edema etc⁴.

The World Health Organization (WHO) estimates that only 40% of births in developing countries take place in health facilities⁵. When delivery care is sought, it is done late, after a lot of delays and this contributes to maternal mortality. The aim of this study to identify the central nervous system complications and its pattern related to eclampsia.

Methods and Materials: This retrospective hospital based observational study was carried out in the Eclampsia ward of Department of Gynaecology and Obstetrics, Dhaka Medical College Hospital. The study period was 1st November 2010 to 31st October 2011. Fifty(50) eclamptic patients were sampled by purposive (non-random) sampling. Patients with features of eclampsia confirmed by consultant gynaecologist and having central nervous system complications diagnosed clinically and evaluated by neurologist were included. Patients having any pre-existing neurological deficit were excluded. Data was collected by a semi-structured questionnaire. The patients of eclampsia were identified by a consultant gynaecologist on the basis of diagnostic criteria^{1,2}. All patients of eclampsia during the study period were interviewed and examined. Patients with central nervous system complications were isolated. A complete clinical examination was performed by the investigator after 24 hours of proper management of eclampsia and was repeated 24 hourly for three occasions for newer central nervous system features. It was reviewed by a consultant neurologist before reaching final diagnosis. Information was obtained from the patient as well as from the witness usually a family member or hospital staff. Clinical features and examination findings were noted. Those patients found having central nervous system complications in clinical examination were sent for CT scan of head in Department of Radiology and Imaging, Dhaka Medical College Hospital. CT scans of head were performed by standard CT scan machine (Somatom emotion Duo, Dual slice, Siemens). The images were reported by the same radiologist in all cases. Relevant data and findings were recorded in a

preformed data sheet for each patient. The different variables of the data were analyzed with the help of SPSS (Statistical Program for Social Science) software version 16. Statistical analysis was done by appropriate procedure. The results were presented as tables and analyzed accordingly. Prior to the commencement of this study, the research protocol was approved by the thesis committee (Local Ethical Committee).

Results:

In this retrospective hospital based observational study a total number of 50 eclamptic patients having central nervous system complications were enrolled and the results of the study were presented here.

Table-I

Age distribution of the eclamptic patients associated with CNS complications (n=50)

Age of the patient (Years)	Number of patients	Percentage
15-20	23	46.0
21-25	14	28.0
26-30	5	10.0
31-35	6	12.0
36-39	2	4.0
Total	50	100.0

Range : 15-39 years; Mean±SD : 22.9 ± 6.1

Table-I showed that the mean age of patients having features of eclampsia was found 22.9 ± 6.1 years ranging from 15-39 years and maximum number (46.0%) was found in the age group of 15-20 years. 28.0% of patients were found in the age group of 21-25 years and only 4.0% of patient were above 35 years of age.

Table-II

Other socio-demographic characteristics of the subjects (n=50)

Variables	Patients	
	Number	Percentage
Habitat	Urban	18 36.0
	Rural	32 64.0
Education	Illiterate	12 24.0
	Primary	29 58.0
	Secondary	6 12.0
	SSC	3 6.0
Family	<10000	39 78.0
Monthly income (Tk.)	10001-20000	9 18.0
	20001-30000	2 4.0

Table-II showed sample descriptions of socio-demographic variables that 36.0% of patients were residing in urban area and 64.0% in rural area. 58.0% of patients were educated up to primary level, and 24.0% were illiterate. 78.0% of patients had a monthly family income of less than 10,000 Tk.

Table-III
Distribution of antenatal care in eclamptic patients with CNS complications (n=50)

Antenatal care	Number of patients	Percentage
Never	39	78.0
1-3 times	11	22.0
Total	50	100.0

Table-III showed that 78.0% of the patients never went to any antenatal care center for present pregnancy and only 22.0% of the patients received antenatal care for 1 to 3 times.

Table-IV
Distribution of time of development of eclampsia with central nervous system complications (n=50)

Time	Number of Patient	Percentage
Prepartum	38	76.0
Postpartum	12	24.0
Total	50	100.0

Table-IV showed 76.0% of patients had prepartum eclampsia whereas 24.0% had post partum eclampsia that developed central nervous system complications.

Table-V
Distribution of gestational age of pregnancy of prepartum eclamptic patient at admission (n=38)

Gestational age (Weeks)	Number of Patients	Percentage
26-28	2	5.26
29-32	5	13.16
33-36	16	42.11
37-40	15	39.47
Total	38	100.00

Range : 26-40 weeks; Mean±SD : 35.1±3.4 weeks

Table-V showed that 42.11% of patients developed eclampsia during the gestational age of 33-36 weeks and 39.47% of patients at their late pregnancy. Only 18.42% of patients had eclampsia before gestational age of 32 weeks. Mean gestational age was 35.1 weeks with a standard deviation of 3.4 weeks.

Table-VI
Distribution of parity of eclamptic patients with CNS complications (n=50)

Parity	Number of Patients	Percentage
Primigravida	29	58.0
2-3	13	26.0
>4	8	16.0
Total	50	100

Table-VI showed 58.0% of patients who developed eclampsia with central nervous system complications were primigravida while 26.0% of patients had 2-3 parity and only 16.0% of patients had e"4 parity.

Table-VII
Pattern of CNS complications in eclamptic patients (n=50)

Complications	Number of Patients*	Percentage
Aphasia	6	12.0
Headache	23	46.0
Focal neurological deficits	9	18.0
Stroke	11	22.0
Cortical blindness	4	8.0
Post partum psychosis	8	16.0
Comatose state	17	34.0
Death	3	6.0

*Multiple responses

Table-VII. showed that 46.0% of patients had headache, then 34.0% had comatose state, 22.0% stroke, 18.0% focal neurological deficits, 16.0% post partum psychosis, 8.0% cortical blindness. Death occurred in 6.0% of cases.

Discussion:

The present study was carried out with an aim to find out central nervous system complications related to eclampsia in the perspective of

Bangladesh. The socio-demographic profile (age, body weight, socio-economic status and parity) of the patients, antenatal care, gestational age, and its relation to develop central nervous system complications in eclampsia and maternal outcome were evaluated.

A Clinical Study of 100 Cases of Eclampsia In Rajshahi Medical College Hospital (RMCH) found the socioeconomic status, level of education, the quality of patients' nutrition and antenatal care of the patients were very low⁶. Another study found that eclampsia was more common below 20 years (6.97%) of age group, primi-mother (7.43%), lower socio-economic status (5.67%) and in unbooked (6.41%) cases⁷. The current study also featured almost same findings in the patients of eclampsia who developed central nervous system complications such as age below 20 years, primigravida, late gestational age, lower socioeconomic status, illiterate or primary level of education, no or a few antenatal care. These results were comparable with other results.

In a study at Eclampsia ward in Dhaka Medical College Hospital in the year of 1998 to 2000 with 2956 eclamptic patients found the incidence of eclampsia with different complications was 21.0%, which included central nervous system complications with coma (2.9%)⁸. Eclampsia study in RMCH found only 4.0% of patient as eclampsia with central nervous system complications⁶. Another study in Mayo Hospital Lahore found 7.0% central nervous system complications in a study⁹. Sibai and Ustav (1995) found that about 6.5% of the patients with eclampsia develop neurological complications¹⁰. In this current study the incidence of central nervous system complications found were 4.77%. These findings were consisted with the current study. While Okanloma and Moodley (2000) in a study in Darban, South Africa found neurological complication rate only 0.9% which truly reflects its better health services of their community⁷.

In the same study it was revealed that out of 140 eclamptic women with neurological complications it was found that 37.5% of patients had hemiparesis, 12.5% hemiplegia, 6.25% monoparesis, 18.75% facial nerve palsy, 12.5% transient blindness (<6 hours), 6.25% cortical blindness (>48 hours),

18.75% post partum psychosis, 6.25% transient ischaemic attack and 6.25% comatose state⁷. Sibai and Ustav (1995) found followings as common neurological complications in eclampsia that include cortical blindness, aphasia, limb weakness, psychosis, coma or cerebrovascular accident¹⁰. Douglas et al. (1994)¹¹, Katz et al. (2000)¹² and Chames et al. (2002)¹³ in separate studies found that persistent occipital or frontal headaches, blurred vision, photophobia, and altered mental status. Patients might experience at least one of these symptoms in 59–75% of the cases. Headaches were reported by 50–75% of the patients, whereas visual changes were reported in 19–32% of the patients¹¹⁻¹³. In the current study shown that 46.0% of patients had headache, then 34.0% had comatose state, 22.0% stroke, 18.0% focal neurological deficits, 16.0% post partum psychosis, 8.0% cortical blindness. Death occurred in 6.0% of cases. These findings support the present study.

There were different range of maternal mortality in different region and different areas of same region. Eclampsia is an important cause of maternal death in many parts of Africa, Asia, the Caribbean, and Latin America. Nigeria has one of the highest rates of maternal mortality in the world. There are several studies in Nigeria. All of those study showed that eclampsia has been noted to be among the most common causes of maternal mortality in Nigeria. Tukur et al. (2007)¹⁴ in Birnin Kudu found eclampsia contributed 43.1%, while Igbafe et al. (2004)¹⁵ in Yenagoa 40.0% and Aboyeji et al. (2004)¹⁶ in Ilorin 27.5% of all maternal deaths. Rathore et al. (2010) found maternal mortality due to eclampsia was around 24.0% in a hospital based study in Lahore, Pakistan⁹. In Rajshahi Medical College Hospital, Khanum et al. (2004) found maternal mortality due to eclampsia was 16.0%⁶. Pal (2011) found that the overall maternal mortality rate was 6.05% in Burdwan Medical College Hospital, Kolkata⁷. In this current study maternal mortality due to central nervous system complications was 6.0%.

Conclusion:

Central nervous system complications remained as important cause of morbidity and mortality of eclampsia of pregnancy. Younger age groups, low

socioeconomic status, lack of education, primigravida, avoidance of antenatal care were commonly observed in patients who developed eclampsia with central nervous system complications.

Referrances:

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