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"A comparative study on Feto-maternal Outcomes in Eclampsia"

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Abstract
Background: *Eclampsia is described as a clinical condition associated with pregnancy complicated by preeclampsia. In Bangladesh though maternal mortality rate (MMR) declined significantly around 40% in the past decade, still eclampsia accounts for 20% of maternal deaths. Eclampsia is uniquely a disease of pregnancy, and the only cure is delivery regardless of gestational age. A rational therapy for general management of hypertension and convulsion has been established in Bangladesh by the Eclampsia Working Group. But controversy still exists regarding obstetric management.*
Aim of the study:*The aim of this study was to evaluate the feto-maternal outcome in eclampsia patients in Bangladesh.*
Methods: *This comparative cross-sectional study was conducted in the Department of Obstretics& Gynecology, 250 Bedded General Hospital, Pabna, Bangladesh during the periodfrom July 2018 to June 2019. Total 120 eclamptic women included in the study as the total study population. The total population was divided into two equal groups.In Group I there were 60 pregnant women with eclampsia and in group II there were 60 pregnant women without eclampsia.*
Results:*In fetal outcome analysis we found 91.67% live births in group II where there were the patients without eclampsia. On the other hand, in patients with eclampsia the live birth rate was only 60% which was less than Group II by 31.67%. Besides these, in Group II ((Non-eclampsia) the asphyxiated cases were only 25% where in Group I (Eclampsia) it was 36%. In both the results the p value were <05.*
Conclusion: *In our study we observed in Group I, where there were the pregnant women with eclampsia incidence of perinatal death was very high. So perinatal care and proper steps against eclampsia can save a lot of lives in the delivery cases.*
Key words: *Eclampsia, Preeclampsia, Feto-maternal, Outcome, Convulsion*

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I. Introduction

The incidence of eclampsia is extraordinarily high in Bangladesh (7.9%), according to the results of a house-to-house survey[1]. In this country, only 2.3% women end their pregnancy under medical supervision (whether it beabortion or delivery)[2], the rest have no access to obstetric care.Eclampsia is defined as the occurrence of convulsions, not caused by any coincidental neurological disease such as Epilepsy, in a woman whose condition also meets the criteria for preeclampsia. The incidence is about 1 in 1600 pregnancies[3]. In the baseline survey of Emergency Obstetric Care (EOC) in Bangladesh, 5% of total obstetric admissions in health facilities were due to pre-eclampsia and eclampsia .Eclampsia contributes to 20% of maternal mortality on a national basis[4]. Eclampsia is the term used to describe the clinical condition of convulsion associated with pregnancy complicated by preeclampsia and may occur before, during or after labour[3]. Though the incidence has been reduced to 0.2-0.5 percent of all deliveries[5], but in Bangladesh the incidence is 5 percent of total pregnancies[6]. In spite of the different preventive approaches to improve obstetric care in Bangladesh, eclampsia still contributes 16 percent of maternal mortality on a natural basis. Eclampsia is the occurrence of convulsion in association with the features of pre-eclampsia[3]. Pre-eclampsia is a multisystem disorder that is usually associated with hypertension and proteinuria[5].Eclamptic seizure classically occurs in the second half of pregnancy to 10 days after delivery, but mayoccur up to 6 weeks postpartum[6].Over half-a-million women die each year from pregnancy related causes and 99% of these occur in the developing countries. In Bangladesh though maternal mortality rate (MMR) declined significantly around 40% in the past decade, still eclampsia accounts for 20% of maternal death[7].In Bangladesh, the incidence of eclampsia is high (7.9%) according to the results of a house to house survey[8]. Though rare in developed countries, it is a common problem in developing countries because illiteracy, lack of health awareness and education, poverty, superstition and prevent women

from seeking medical advice during pregnancy. Still eclampsia is one of the leading causes of maternal death in Bangladesh[7].Eclampsia is a multisystem disorder, and the pathophysiology is thought to involve cerebral vasospasm leading to ischemia and cerebral edema.[3]Until recently, the treatment of eclampsia varied throughout the world. The basic principles of management are: control of convulsion, control of hypertension, initiation of steps to effective delivery and general nursing care. The first goal of management of eclampsia is control of convulsions and stabilization of the patient's basic cardiovascular status. Administration of magnesium sulphate by an established protocol is considered to be the most rapid, efficient and safe pharmacologic approach for accomplishing this goal[8].High blood pressure is controlled by injection of hydralazine intravenously followed by oral nifedipine or methyldopa or atenolol. Eclampsia is uniquely a disease of pregnancy, and the only cure is delivery regardless of gestational age. A national therapy for general management, management of hypertension and convulsion has been established in our setup by 'The Eclampsia Working Group of Bangladesh', but controversy exists regarding the obstetric management[9]. For lake of proper management the incidence rate becomes high in developing countries. In as tudy they stated, in developing countries, the prevalence of eclampsia varies widely, from 1 in 100 to 1 in 1700.[10]As we do not have adequate facilities for intrapartum management, cesarean section is preferred in manycases, particularly when the fetus is alive, considering the fact that patients and the fetuses may not tolerate the stress of labor[11].In Bangladesh, many researchers have worked on eclampsia, but most of the works are related to efficacy, dose and frequency of use of magnesium sulphate. The aim of this study was to evaluate the feto-maternal outcome in eclampsia patients in Bangladesh.

II. Objectives

General Objective:

1. To compare feto-maternal outcomes in pregnant women with eclampsia and pregnant women without eclampsia.

Specific objectives:

1. To assess the feto-maternal outcomes in pregnant women with eclampsia in Bangladesh
2. To observe the conditions of Eclampsia patients in Bangladesh

III. Materials and Methods

It was a comparative cross-sectional study and it was conducted in the Department of Obstretics& Gynecology, 250 Bedded General Hospital, Pabna, Bangladesh from July 2018 to June 2019. A total 120 women with term pregnancy, live fetus were included in the study. Patients were included into two groups. Group I consisted of 60women (patients) with eclampsia and Group II 60 women (patients) without eclampsia. Diagnostic criteria of eclampsia were high blood pressure (>140/90 mm of Hg), significant proteinuria and convulsion associated with pregnancy more than 20 weeks of gestation. The purpose and procedure of the study was explained to the subjects who fulfilled the enrollment criteria. After taking informed written consent from the guardians of the patients, history was taken carefully and a thorough clinical examination was done. Then urine was tested (heat coagulation method) for protein. Convulsions were controlled by magnesium sulphate ($MgSO_4$) if not contraindicated and blood pressure was controlled by hydralazine, nifedipine or methyldopa. After initial management, decision for termination of pregnancy was taken by the senior obstetrician of the unit. The mode of delivery was carefully noted and the patients were followed-up till discharge or death.Parameters for fetal and neonatal outcomes were birth weight, APGAR score, live or still births and any complication. Hematuria, pulmonary edema,Cerebrovascular accident (CVA), renal failure, obstetric shock, abuptio placenta and postpartum hemorrhage (PPH) were considered as maternal complications.All the relevant data for each patient were recorded in a predesigned data collection sheet. Collected data were compiled and appropriate statistical analyses (Chi-square and unpaired Student's *t* tests) were done using computer based software, SPSS version 20. P value <0.05 was taken as minimum level of significance.

IV. Results

In our study we found, maximum number of women in Groups I and Group II belonged to age group <20 years (58.33% and 48.33%); mean ± SD of age was 23 ± 3.75 years and 22.44 ± 4.50 years, respectively. Gestational age was 37 ± 1.17 and 37 ± 1.51 weeks in Groups I and II, respectively.Both in Group I and Group II most of the women were from low socioeconomic status (51.67% and 53.33%), primigravida (73.33% and 75%), There was no significant difference in any of the variables. In analyzing clinical characteristics we found the highest number of patients taken irregular antenatal check-up. In Group I this ratio of patients was 63.33% and in Group II it was 68.33%. In total 26.67% Group I patients and 20% Group II patients taken regular check-up. On the other hand, 10% Group I patients and 11.67% Group II patients did not taken check-up at all. Only 18.33% Group I patients and 10% Group II patients were conscious about hospital admission. On the other hand, 31.67% Group I patients and 38.33% Group II patients were fully unconscious about hospital admission.

In fetal outcome analysis we found 91.67% live births in group II where there were the patients without eclampsia. On the other hand, in patients with eclampsia the live birth rate was only 60% which was lass than Group II by 31.67%. Besides these, in Group II ((Non-eclampsia) theasphyxiated cases were only 25% where in Group I (Eclampsia) it was 36%. In both the results the p value were <05.

Table I: Comparison of baseline socio-economic and demographic conditions between groups (n=120)

Parameters	Group I (n=60)		Group II (n=60)		P value
	Number	%	Number	%	
Age (in years)					
<20	35	58.33	29	48.33	0.076
21-25	10	16.67	12	20.00	
26-30	12	20.00	16	26.67	
>30	3	5.00	3	5.00	
Mean ± SD	23 ± 3.75		22± 4.50		
Range	18-36		18-36		
Gestational age (weeks)					
< 37	27	45	21	35	0.091
>37	33	55	39	65	
Mean ± SD	37 ± 1.17		37 ± 1.51		
Socioeconomic condition					
Lower	31	51.67	32	53.33	0.172
Middle	20	33.33	19	31.67	
Upper	9	15.00	9	15.00	
Gravida					
Primi	44	73.33	45	75	0.063
Multi	16	26.67	15	25	

Table II: Comparison of clinical characteristics between groups (n=120)

Parameters	Group I (n=60)		Group II(n=60)		p value
	n	%	n	%	
Antenatal check-up					0.075
Regular	16	26.67	12	20	
Irregular	38	63.33	41	68.33	
None	6	10.00	7	11.67	
Urine albumin					0.068
Trace (+)	17	28.33	9	15	
Mild (++)	16	26.67	27	45	
Moderate (+++)	12	20.00	13	21.67	
Severe (++++)	15	25.00	11	18.33	
Consciousness on admission					0.408
Conscious	11	18.33	6	10	
Unconscious	19	31.67	23	38.33	
Semiconscious	30	50.00	31	51.67	

Table III: Mean blood pressure of patients of both groups (n=120)

Parameters	Group I (n=60)	Group II (n=60)	P value
Systolic Blood Pressure (mm Hg)			0.076
Mean ± SD	161 ± 22.8	162 ± 22.79	
Range	120-230	140-220	
Diastolic Blood Pressure (mm Hg)			0.107

Mean ± SD	100 ± 11.25	101 ± 14	
Range	79-129	88-124	

Table IV: : Fetal outcome among patient's in two groups (n=120)

Parameters	Group I (n=40)		Group II (n=40)		P value
	n	%	n	%	
Fetal outcome					
Live birth	36	60	55	91.67	0.035
Perinatal death	24	40	5	8.33	
Complications among live birth					
Asphyxiated	36	60	15	25	0.019
None	24	40	45	75	

V. Discussion

Eclampsia is a well-recognized major cause of maternal and perinatal morbidity and mortality. Though the incidence has fallen considerably in the developed countries, its incidence, morbidity and mortality are still very high in Bangladesh[8].In Bangladesh, among the causes of death in women of reproductive age, maternal death contributes 14% and eclampsia accounts for 20% of maternal death[7]. Control of convulsion and management of hypertension are two important parts of the management of eclampsia. There is now conclusive evidence that magnesium sulphate ($MgSO_4$) is the best available drug for management of convulsion[9] and is widely used in different centers of Bangladesh. Once the convulsions are under control, there is universal agreement to deliver the patient regardless of gestational age. The mode is determined by gestational age, condition of the cervix and fetal condition[3].The chances of successful induction of labor are low in primigravide with an unfavorable cervix at <34 weeks gestation. Even if induction is successful in this group, emergency cesarean section becomes necessary in up to 45% of cases because of fetal intolerance of labor. A high proportion of such cases are, therefore, delivered by cesarean section without attempt to induction, particularly when delivery needs to be expedited quickly because of concerns about maternal condition[3]. In our study, most of the patients at term had a meangestational age of 38 weeks. This corresponds with the other studies.[12]In our study we found that 53.33% patients belonged to low socioeconomic group and 73.5% of patients in the study of El-Nafaty et al.[13] On an average 11.67% of patients of our study did not receive any antenatal care which was 35.57% in the Khanam et al[11] study and 69.2% in the El-Nafaty series.[13]The two groups of patients were also matched with regard to blood pressure and proteinuria and consciousness level. Most of the patients of both groups presented with anteparturneclampsia in unconscious or semiconscious state, which is similar to another study.[11]This is similar to the findings of Ikechebelu and Okoli.[17] Convulsions occurred in 55.8% patients after the 37th week in the study of Khanam et al.[12]Ikechebelu and Okoli[17] have reported in their series a high cesarean section rate of 85.7 percent among eclamptic patients. It is observed in our study that, the patients without eclampsia a better maternal outcome with fewer incidences of recurrent convulsions and other maternal complications. Regarding fetal outcome, the number of stillbirths and asphyxiated baby was less in Group II than that in Group I; the result being statistically significant. So the result of the study shows a better feto-maternal outcome withnon-eclampsia women.

VI. Limitations of the study

It was a single centered study with a small sized sample. So the findings of this study may not reflect the exact scenario of the whole country.

VII. Conclusion &Recommendations

In our study we observed in Group I, where there were the pregnant women with eclampsia incidence of perinatal death was very high. So perinatal care and proper steps against eclampsia can save a lot of lives in the delivery cases. To gain more specific findings we would like to recommend for conducting more studies on the same issue in several places with larger sample size.

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