Original Article

A clinical study on risk- factors and feto-maternal outcome of pre-eclampsia in Bangladesh

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Abstract

Background *Preeclampsia (PE) is a major cause of maternal and foetal mortality and morbidity.*

Aim *The purpose of the present study was to identify the risk factors, prognosis, maternal and foetal outcome of pre eclampsia patients.*

Methods *This descriptive type of cross sectional hospital based study was conducted in the Department of Obstetrics & Gynecology at Bangabandhu Sheikh Mujib Medical University (BSMMU) & Dhaka Medical College Hospital (DMCH), Dhaka for a period of 6 months. All admitted cases of pre-eclampsia patients who were given the consent were included in the study. Then a thorough history was taken followed by relevant clinical examination and some base line investigation done. For renal function urine for protein, blood for urea, creatinine and uric acid estimation were done. All the information were recorded in a predesigned data collection sheet. Fetal monitoring was done by observing foetal movement, foetal heart sound 6 hourly, ultrasonography of lower abdomen to see foetal well-being and amniotic fluid volume. Maternal and fetal complications were monitored.*

Results *The incidence of preeclampsia was found in 3.4% in this study. Among the studied patients highest percentage had complaints of swelling of legs and abdominal pain (38%). In this study 46% pregnancies were terminated in 29-34 weeks of gestation. Obstetric examination revealed that 42% fundal height 29-34 weeks. Among the study population 4% patients developed abruptio placenta, 2% patients developed post partum eclampsia and 2% patients developed disseminated intravascular coagulation. In the developing countries the perinatal mortality in pre-eclampsia remains to the extent of about 20%, about 50% of which is being still born. In this study 80%, pregnancies gave live born foetus, 6% pregnancies still born babies and Intra uterine death occurred in 6% pregnancies, 8% pregnancies ended in abortion, before the age of viability of foetus. In the study population intrauterine growth retardation was present in 50% babies, 52% babies were premature, still birth was 6%, Intra uterine death was in 6% cases, and abortion was 6%. The IUGR babies also were premature. In this study 28% pregnancies had no foetal or maternal complication. Only foetal complication was present in 60% pregnancies. Only maternal complication was present in 2% pregnancies. Both maternal and foetal complication was present in 10% pregnancies.*

Conclusion *In this study concluded that the abruptio placenta, post partum eclampsia and DIC are common complications of pre-eclampsia patients. Perinatal mortality and still born are also found though live born foetus are the most common.*

Keywords: *Pre-Eclampsia, feto-maternal Outcome, Risk- Factors*

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Introduction

Preeclampsia (PE) is a pregnancy speciûc, heterogeneous, multisystem disorder, which has the classic clinical features of pregnancy-induced hypertension and proteinuria and may lead to eclampsia[1,2,3]. It is a major cause of maternal and fetal mortality and morbidity[4].

The incidence of pre-eclampsia is 2-10%, depending on the population studied and definitions of pre-eclampsia[5]. The National Institute for Clinical Excellence guidelines on antenatal care have reduced the number of antenatal visits recommended for healthy woman at low risk[6]. The presence of pregnancy-induced hemolysis, elevated liver enzymes, and low Platelets which is known as HELLP syndrome may also be classiûed as a form of preeclampsia[7].

Preeclampsia, eclampsia, and HELLP syndrome are a signiûcant cause of maternal and perinatal morbidity, mortality, and iatrogenic premature delivery[8], with long-term health effects for both mother and child[9,10]. Considerable research efforts have resulted in improved understanding of the genetic basis of preeclampsia[11], exploration of numerous possible predictors of the disorder[12] and resulted in the use or nonuse of diverse treatments[13,14,15,16]. Of these possible treatments, antihypertensive medications and magnesium sulphate are widely used in developed countries and in some developing countries[17]. Delivery of the baby, placenta, and membranes, indicated for maternal or fetal reasons, remains the only method for resolving preeclampsia, although it does not immediately remove all risks of mortality and morbidity, particularly in the early postpartum period[18]. Thus, there is not yet any considerable understanding of the genetic, pathophysiological, and clinical manifestations of PE, efective treatments, and long-term physical efects[18].

In addition to that, there is a paucity of published research on risk- factors and feto-maternal outcome of Pre-Eclampsia in Bangladesh. The purpose of the present study was to identify the risk factors, prognosis, maternal and foetal outcome of pre eclampsia patients.

Methods

This descriptive type of cross sectional hospital based study was conducted in the department of Obstetrics & Gynecology at Bangabandhu Sheikh Mujib Medical University (BSMMU) & Dhaka Medical College Hospital (DMCH), Dhaka from February 2008 to July 2008 for a period of 6 months. All admitted cases of pre-eclampsia patients who were given the consent were included in the study. After admission, an informed verbal consent was taken from each patient. Then a thorough history was taken followed by relevant clinical examination and some base line investigation done. For renal function urine for protein, blood for urea, creatinine and uric acid estimation were done. All the informations were recorded in a predesigned data collection sheet. Ethical clearance was taken from the ethical committee of Department of Obstetrics and Gynecology of BSMMU and DMCH. In this study socio-economic status was considered by per month income of the family. Poor, middle and high socio-economic conditions were considered for those who had monthly income taka 5,000 to 15,000 and >15,000. Fetal monitoring was done by observing fetal movement, fetal heart sound 6 hourly, ultrasonography of lower abdomen to see fetal well-being and amniotic fluid volume. The patients were treated by rest, anit-hypertensive drugs and by termination of pregnancy, when indicated. The drugs which were chosen for the treatment of patient were methyldopa, nifedipine, hydralazine and sometimes with injection magnesium sulphate. Maternal and fetal complications were indentified and follow up of the mother and infants were done until their discharge from hospital. The entire collected data were compiled on a master chart first and then statistical analysis of the results were obtained by using window based computer software devised with Statistical Packages for Social Sciences (SPSS-17) (SPSS Inc, Chicago, IL, USA).

Results

During the study period, a total of 4725 pregnant women were admitted for delivery of which 162 pregnancies were terminated for preeclampsia. Thus the hospital based incidence of preeclampsia was 3.4%.

Table I *Age distribution pre-eclampsia mother (n = 50)*

Age in year	Number of patients	Percent
15-20	4	8
21-25	20	40
26-30	19	38
31-35	4	8
36-40	3	6
>40	0	0
Total	50	100

The incidence of pre eclampsia in different age group has been measured and has been found that there is a highest incidence of pre-eclampsia in age group of 21-25 years (40%) followed by 26-30 years (38%) age group, 15-20 year (8%) in age group and 31-35 year (8%) age.

Table II *Clinical findings of the pre-eclampsia mother (n = 50)*

Complaints	Number of patients	Percent
Headache	7	14
No fetal movement	2	4
Abdominal pain	19	38
Blurring of vision	4	8
Swelling of legs	19	38
Vomiting	4	8
Watery vaginal discharge	7	14
Swelling of vulva	5	10
P/V bleeding	4	8
Swelling of face	9	18
Pallor	6	12
Respiratory distress	3	6

Among the studied patients highest percentage had complaints of swelling of legs and abdominal pain (38%). Then swelling efface (18%), headache (14%), watery vaginal discharge (14%) Blurring of vision and vomiting (8%)

Table III *Distribution of pre-eclamptic mother by gestational age at the time of delivery / abortion (n =50)*

Gestational age during delivery (weeks)	Frequency	Percent
20-28	6	12
29-34	23	46
35-40	21	42
Total	50	100

There is 46% delivery occurred at 29-34 week gestational age period and 42% delivery is occurred at 35-40 weeks gestation. However it is found 12% of termination of pregnancy occurred in 20-28 weeks gestation.

Table IV *Distribution of pre-eclamptic mother by obstetric examination findings (n = 50)*

Parameters	Frequency	Percent
Fundal height (weeks)		
20-28 weeks	16	32
29-34	21	42
35-40	13	26
Lie		
Longitudinal	50	100
Presentation		
Cephalic	42	84
Breech	8	16
Foetal movement		
Present	44	88
Absent	6	12
Foetal heart sound		
Present	44	88
Absent	6	12

Obstetric examination revealed that 32% pregnant women had fundal height 20-28 weeks 42% fundal height 29-34 weeks, 26%, fundal height 35-40 weeks. All the patients had longitudinal lie of the foetus with 84% cephalic and 16% beech. It was also found that 88% patients had foetal movement and foetal heart rate (Table - IV).

Table V *Distribution of complications of foetal outcome (n = 50)*

Foetal out come	Frequency	Percent
No complications	15	30
IUGR	25	50
Prematurity	25	52
Still birth	3	6
IUD	3	6
Abortion	3	6

Table V shows that out of 50 pre-eclamptic pregnancy outcome there was no foetal complication in 30%cases, IUGR was present in 50% cases and prematurity was present in 52% cases. There was still birth in 6% cases, IUD in 6% cases, abortion in 6% cases.

Table VI *Distribution of complication of mother in pre eclampsia (n = 7)*

Maternal complication	Frequency	Percent
Eclampsia	1	14.28
Abruptio placenta	2	28.58
Heart failure	1	14.28
DIC	1	14.28
HELLP syndrome	2	28.58
Total	7	100

Out of total 7 patients complicated by preeclampsia 28.58% had abruptio placenta, 28.58% had HELLP syndrome, 14.28% had eclampsia, 14.28% heart failure, 14.28% had DIC (Table VI).

Table VII *Distribution of study patients by pregnancy outcome (n = 50)*

Pregnancy out come	Frequency	Percent
No complication of mother and foetus	14	28
Foetal complication only	30	60
Maternal complication only	1	2
Both maternal and foetal complication	5	10
Total	50	100

Table VII revealed that out of 50 patients 28% had no complication of mother and foetus, 60% patients had only foetal complication, 2% patients had only maternal complication, but 10% cases had both maternal and foetal complication.

Discussion

Pre-eclampsia complicates about 2-8% of all pregnancies[19]. Pre eclampsia remains a major cause of maternal and preinatal mortality and morbidity and is particularly devastating in developing countries. Despite recent progress towards under standing the cause of pre eclampsia and/or its phenotypes, the aetiology of this serious disorder remains elusive.

In this study a total number of 50 patients with pre eclampsia up to termination of their pregnancies were studied and was recorded their foetal and maternal outcome as well as risk factors of pre eclampsia. The incidence of preeclampsia was found in 3.4% in this study. Similar result was reported by Anderson[9]. In this study 40% patients were from 21-25 years of age and 38% patients were from 26-30 years of age. Among the studied patients highest percentage had complaints of swelling of legs and abdominal pain (38%). Then swelling of face (18%), headache (14%), watery vaginal discharge (14%), blurring of vision and vomiting (8%) In this study 4% Patients had chronic hypertension, 8% patients had Gestational diabetes mellitus, 8% patients had twin pregnancy, 2% patients had history of stroke. These results are correlated with the result of Naher[20] performed in Bangladesh. Common clinical findings of pre-eclampsia are reported by Anderson[9] which are consistent with the present study. Chronic hypertension, glucose intolerance, multiple pregnancy and cardio vascular disease are all known risk factors of pre eclampsia. In many studies 24% patients were obese and 8% patients had gestational diabetes mellitus. Obesity has a strong link with insulin resistance and pre disposes for type II diabetes and gestational diabetes. Both obesity and diabetes are associated with a higher risk of cardiovascular diseases and hence pre-eclampsia. Hyperinsulinaemia may directly predispose to hypertension by increased renal sodium reabsorption and stimulation of the sympathetic nervous system. Another possible explanation is that insulin resistance or associated hyperglycaemia impairs endothelial function[21]. However addition risks factors are also play

important role for the causation of pre-eclapmsia like obesity, hypertension, glucose intolerance, teen age and late pregnancies, cardiovascular disease, renal disease, antiphospholipid syndrome, thrombophilia, pregnancies complicated by trisomy or multiple pregnancy[22].

In this study 46% pregnancies were terminated in 29-34 weeks of gestation 42% pregnancies were terminated in 35-40 weeks gestation. 12% pregnancies were terminated before the age of viability. In Bangladesh this is <28 weeks of gestation. It is interesting that 90% mothers did not have any complication and 4% pre-eclamptic mothers developed HELLP syndrome. It correlates with the overall 10% occurrence of HELLP syndrome as a complication of severe pre-eclampsia. The reason is that among 56% of study population with severe pre-eclampsia and 7.14% is developed HELLP syndrome. This result correlates with the result of Naher[20]. Meher and Duley[23] are found similar result.

Obstetric examination revealed that 32% pregnant women had fundal height 20-28 weeks, 42% fundal height 29-34 weeks, 26%, fundal height 35-40 weeks. All the patients had longitudinal lie of the foetus with 84% cephalic and 16% beech. It was also found that 88% patients had foetal movement and foetal heart rate. Levine et al[24] has mentioned that preeclampsia is commonly occurred before completing the full term pregnancy which is consistent with the present study.

Among the study population 4% patients developed abruptio placenta, 2% patients developed post partum eclampsia, 2% patients developed heart failure, 2% patients developed disseminated intravascular coagulation. All are life threatening complications. Similar result was reported by Conde-Agudelo et al[25]. In this study there was no maternal death.

In the developing countries the perinatal mortality in pre eclampsia remains to the extent of about 20%, about 50% of which is being still born. In this study 80%, pregnancies gave live born foetus, 6% pregnancies still born babies and Intra uterine death occurred in 6% pregnancies, 8% pregnancies ended in abortion, before the age of viability of foetus which is 28 weeks of gestation in Bangladesh. Conde-Agudelo et al[25] reported similar findings. Pre-eclampsia is a grave condition. Developing country like Bangladesh is still fighting against these serious conditions.

In the study population intrauterine growth retardation was present in 50% babies, 52% babies were premature, still birth was 6%, Intra uterine death was in 6% cases, and abortion was 6%. The IUGR babies also were premature. Paruk and Moodley[26] have found the similar result. In this study 28% pregnancies had no foetal or maternal complication. Only foetal complication was present in 60% pregnancies. Only maternal complication was present in 2% pregnancies. Both maternal and foetal complication was present in 10% pregnancies. The incidence of small for gestational age infants and perinatal mortality is markedly increased in patients with pre-clampsia[27].

Conclusion

In conclusion the abruptio placenta, post partum eclampsia, heart failure and disseminated intravascular coagulation are common complications of pre-eclampsia patients. Perinatal mortality and still born are also found though live born foetus are the most common.

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