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Original Articles

Risk Factors and Fetal Outcome of PE Cases in a Tertiary Level Hospital

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Abstract:

Objective: *To study the risk factors and foetal outcome of pre-eclampsia in a tertiary level hospital.*

Materials and methods: *A total 40 consecutive patients of pre-eclampsia (PE) were included in this study between April 2009 to March 2010. Patients whose B.P. was ³140/90 mm of Hg and proteinuria detected by dipstick test were included in this study. Detailed discussion about the study was done with the patient and then written informed consent was taken from them. Detailed history about patient profile, risk factors and foetal outcome in terms of birth weight, maturity and IUGR(intrauterine growth retardation) etc were recorded in predesigned data collection sheet. Data was expressed in terms of frequenies and percentages.*

Results: *Most of the patients were in the age group of 20-30 years (52.5%) and 60% were primi gravida . Most of the patient (60%) developed pre-eclampsia at 37 weeks of gestation. Regarding risk factors 30% patients were obese, previous history of pre-eclampsia (PE) in 7.5% cases, pregnancy with diabetes was found in 5% cases and multiple pregnancy in 2.5% cases. Caesarean section was done in 72.5% cases and vaginal delivery occurred in 25% cases. Birth weight 2.5-3 kg found in 40% cases. 37.5% babies were premature, IUGR in 7.5%, intrauterine death in 5% and neonatal death was observed in 2% cases.*

Conclusion: *Primi gravida are more prone to develop pre-eclampsia. Obesity, previous history of pre-eclampsia, multiple pregnancy and pregnancy with diabetes mellitus increase the risk of pre-eclampsia. Prematurity, intrauterine growth retardation (IUGR), intrauterine death (IUD), neonatal death are important foetal complications.*

Key Words: *Pre-eclampsia, Risk factors, Foetal outcome.*

Introduction:

Pre-eclampsia is a pregnancy specific multisystem disorder of unknown etiology. The disorder affects approximately 5-7% of pregnancies and is a significant cause of maternal and fetal morbidity and mortality[1]. The international society for the study of hypertension in pregnancy defines pre-eclampsia as hypertension of at least 140/90 mm of Hg on two separate occasion ³ 4 hours apart accompanied by significant proteinuria of at least 0.3gm in a 24 hour collection of urine, arising denovo after 20th week of gestation in a previously normotensive woman and resolving completely by the 6th post-partum week[2.3] .Recent reports from World Health Organization (WHO) estimate that pre-eclampsia is directly responsible for 70000 maternal deaths annually worldwide[4].

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In addition to the maternal mortality and morbidity, pre-eclampsia accounts for 500000 infant death annually[5]. Perinatal mortality is largely through iatrogenic prematurity by five fold[5].

PE results from impaired trophoblastic differentiation and invasion in early pregnancy, which stimulates sustained oxidative stress and a systemic inflammatory response[6] . One of the most striking physiological change in PE is intense systemic vasospasm, which is responsible for decreased perfusion of virtually all organ system[7] . Activation of coagulation cascade and resultant microthrombi formation further compromise blood flow to organs[7].

Risk factors for PE include medical conditions with the potential to cause microvascular disease e,g. diabetes mellitus, chronic hypertension, connective tissue disease, anti-phospholipid antibody syndrome and nephropathy[8.9]. Other risk factors are associated with pregnancy itself or may be specific to mother or father of the fetus[8.9] e.g. maternal age more than 35 years or less than 20 years, family history of preeclampisia, nulliparity, PE in previous pregnancy, obesity, multiple pregnancy, pregnancy with urinary tract infection, hydatidiform mole and first time mother as paternal genes expressed in the fetus contribute to the mother's risk of pre eclampsia. Preeclampsia is often asymptomatic and so it's detection depends on sign or investigations. Some women may be asymptomatic at the time they are found to have hypertension and proteinuria; other may present with symptoms of severe preeclampsia such as visual disturbance, severe headache or upper abdominal pain. From 4 to 14 percent of women with PE present with superimposed HELLP syndrome (haemolysis, elevated liver enzyme and low platelet count)[10].The 8th confidential enquiry into maternal and child death revealed PE and eclampsia as a 2nd leading cause of direct maternal death[11].Severe PE is also associated with significant maternal morbidity, including eclampsia, intracerebral haemorrhage, pulmonary oedema, acute renal failure, liver dysfunction and coagulation abnormalities. Obstetric complications include abruptio placental, intrauterine growth retardation, premature delivery and intrauterine death.

PE is commonly referred as the "Disease of theories" making its prevention and management an ongoing challange worldwide. Women with PE can be observed on outpatient basis with frequent assessment of maternal and fetal well-being. Hypertension can be controlled with antihypertensive therapy. Exact levels of hypertensive control remain controversial but clinician should aim for blood pressure control between 140-150 of Hg systolic and 90-100 mm of Hg diastolic[12].Delivery remains the ultimate treatment for preeclampsia[8]. Though maternal and fetal risks must be weighed in determining the timing of delivery, clear indications for delivery must exists e.g. IUGR, oligohydromnios, gestational age ³38 weeks, suspected placental abruption, progressive deterioration of hepatic and renal function, eclampsia[13]. When possible, vaginal delivery is preferable to avoid added physiological stresses of caesarean delivery[14]. During labour the management goals are to prevent seizures and control of HTN[8]. Magnesium sulfate is the medication of choice for prevention of eclamptic seizures in the women with severe PE[11]. Inspite of major advances in understanding the pathophysiology of the disease in recent years, there is no well-established measure, for prevention of pre-eclampsia in the general population till date. A recently updated cochrane review demonstrated that the use of antiplatelet agents, particularly low dose aspirin results 17% reduction in the risk of developing pre-eclampsia[15].

Methodology:

This observational prospective study was conducted in Dhaka Community Medical College and Hospital between April 2009 to March 2010. From all admitted pregnant women, only cases of Preeclampsia (PE) were selected for the study. Only 40 patients fulfilled the selection criteria. Each subject was informed regarding the details of the study and written consent was obtained from them. Diagnosis of PE was done on the basis of examination and investigations. All hospitalized pregnant women with systolic blood pressure ³140 or diastolic blood pressure ³90 mm of Hg and proteinuria detected by dipstick and urine for albumin were included in the study. Gestational age was estimated from 1st day of last menstrual period (LMP), previous antenatal records and also from previous Ultrasonography records. The patients who got conservative treatment were excluded from the study. Ethical clearance was obtained from the institutional ethical committee. Detailed history about patient profile, risk factors, obstetric management, foetal outcome were recorded in the predesigned data collection sheet. Data was expressed in terms of frequencies and percentages.

Results:

Most of the patients were in the age group of 20-30 years (52.5%) (figure-1). Sixty percent(60%) were

primi gravida (table-1). Most of the patient (60%) developed pre-eclampsia between 37-40 weeks of gestation (table-2). Regarding risk factors 30% patients were obese, previous history of pre-eclampsia (PE) in 7.5% cases, pregnancy with diabetes was found in 5% cases and multiple pregnancies in 2.5% cases (table-3). 55% patients has no risk factor. Regarding outcome caesarean section was done in 72.5% cases and vaginal delivery occurred in 25% cases (table-4). Birth weight 2.5-3 kg found in 40% cases(table-5). 45% babies were low birth weight. 37.5% babies were premature , IUGR in 7.5%, intrauterine death in 5% and neonatal death was observed in 2% cases (table-6).

Maternal complications of pre-eclampsia include development of eclampsia 2.5%, abruptio placenta of 7.5%, HELLP syndrome 5% and post partum haemorrhage in 10%cases (table-7). Total 10 (25%) patients developed complications.

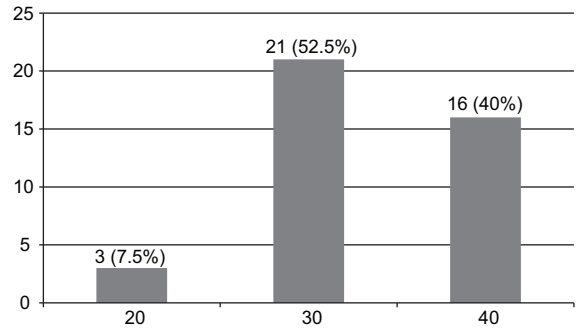

Fig.-1: *Age Range in Patients with Pre-eclampsia*

Table-I

Gravidity of the women of pre-eclampsia (n=40)

Gravida	Number of patient	Percentage
1st	24	60%
2nd	3	7.5%
3rd	8	20%
4th and above	5	12.5%
Total	40	100%

Table-II

Gestational age at the time of diagnosis (n=40)

Weeks of gestation	Number	Percentage
<30	2	5%
30-33	6	15%
34-36	8	20%
37-40	24	60%
Total	40	100%

Table-III

Risk Factors(n=40)

Risk factors	Number	Percentage
Obesity	12	30
Previous history of pre-eclampsia	3	7.5
Pregnancy with diabetes mellitus	2	5
Multiple pregnancy	1	2.5
No risk factors	22	55
Total	40	100

Table-IV

Delivery outcome (n=40)

Mode of delivery	Number	Percentage
Vaginal delivery	10	25
Caesarean section	29	72.5
Hysterotomy	1	2.5
Total	40	100

Hysterotomy was done in missed abortion as induction was failed

Table-V

Feotal Birth Weight (n=40)

Birth weight in kg	Number	Percentage
1-1.5	8	20
1.6-2.4	10	25
2.5-3	16	40
>3	6	15
Total	40	100

Table-VI

Foetal outcome

Foetal outcome	Number	Percentage
Premature	15	37.5%
Intra uterine growth retardation (IUGR)	3	7.5%
Intra uterine death(IUD)	2	5%
Neonatal death	2	0.5%
Foetus with complications	22	50.5%
Normal	18	49.5%

Table-VII
Maternal Complication

Maternal complication	Number	Percentage
Eclampsia	1	2.5%
Abruptio placenta	3	7.5%
HELLP syndrome	2	5%
Postpartum haemorrhage	4	10%
Other complications	10	25%
Without complication	30	75%

Discussion:

Pre-eclampsia contributes to be major complications in pregnancy, resulting in mortality and serious morbidity to both mother and baby. Maternal age below 20 and greater than 35 years are at increased risk of developing pre-eclampsia[8] . In the present study 52.5% patients were in age group of 20-30 years and this correlate to other previous studies [16,17,18] . In this study 60% patients were primi gravida ,which is in aggrement with other study[16] . The incidence of pre-eclampsia increases as pregnancy approaches at or near term. In this study gestational age ³37 weeks was found in 51.5% cases. The result is nearly similar to other studies [16,17] .

Among risk factors previous history of pre-eclampsia was observed in 7% and pregnancy with diabetes in 5% cases , which is almost similar to other study[18]. Obesity is a risk factor of PE. In present study 30% patients were obese at booking. Similar findings was found by Jone Viller et al[19]. Pre-eclampsia is a progressive disease and delivery is the ultimate treatment for pre-eclampsia. In present series vaginal delivery was in 25% cases and caesarean section was done in 72.5% cases. Study by Romuald et al[20] found LUCS in 74.22% cases .In present study birth weight of 40% babies were in between 2.5-3 kg and 25% were in between 1.6-2.4 kg. E. Abalos et. al observed 6.4% ³ 2.5 kg and 26.1% in between 1.5-2.4 Kg.[17] This disparity is because in my study most of the patients developed pre-eclampsia at or near term. Among foetal outcome IUGR in 7.5%, IUD in 5% and neonatal death was observed in 5% cases .The observed fetal outcome in present study is comparable to studies conducted by Parveen et. Al[18] .

Prematurity was found in 37.5% cases in this study , which is in agreement with other study[20].Most common maternal complication found in this study was post partum haemorrhage which is 10%, followed by abruption placenta 7.5%, HELLP syndrome 5%and eclampsia 2.5% was observed. The incidence of maternal complications is similar to those reported in previous studies[18,20] . Pre-eclampsia contributes to the high mortality and morbidity of both mother and neonate. Early detection, careful monitoring and treatment can improve maternal and fetal outcome.

Conclusion: Primi gravida are more prone to develop pre-eclampsia. Obesity, previous history of pre-eclampsia, multiple pregnancy and pregnancy with diabetes mellitus increase the risk of pre-eclampsia. Pre maturity, intra uterine growth retardation (IUGR), intrauterine death (IUD), neonatal death are important fetal complicatios.

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