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Original research article

A Clinical Study of Early Onset Pre-Eclampsia V/S Late Onset Pre-Eclampsia: Maternal and Perinatal Outcome

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Abstract

Background& Objective: To study the maternal & perinatal outcome in women with preeclampsia remote from term i.e. early onset PE (between 20-34 weeks of gestation) and to compare the maternal and perinatal outcome in women with preeclampsia near term i.e. lateonset PE (between 35-42 weeks of gestation) with reference to age, parity, severityof PE, mode of delivery and complications.

Materials and methods: The study was a prospective observational study conducted in the department of Obstetrics and Gynaecology in DMCH, Darbhanga. 100 antenatal women meeting the inclusion criterion were studied. They were further divided into two groups: Group 1- Preeclampsia remote from term (< 34 weeks of gestation) and Group 2 – Preeclampsia near term (> 34 weeks of gestation.

Conclusion: It was concluded that Preeclampsia remote from term i.e. early onset preeclampsiais associated with more maternal and perinatal complications, the relative risk of developing obstetrical complications in preeclampsia remote from term is 2 times more than in late onset preeclampsia.

Keywords: Preeclampsia, Maternal, Perinatal outcome

Introduction

Preeclampsia is a pregnancy specific disorder commonly defined as de novo hypertension and proteinuria after 20 weeks of gestational age. It occurs in approximately 3-5% of pregnancies and is still a major cause of both fetal and maternal morbidity and mortality world-wide. (1)

Preeclampsia is a multi-system disorder of unknown etiology that is unique to human pregnancy and is characterized by abnormal vascular response to placentationassociated with increased systematic vascular resistance (SVR), enhanced platelet aggregation, activation of coagulation system and endothelial dysfunction. It remainsa major cause of maternal and fetal/neonatal morbidity and mortality. Every third case of obstetric morbidity and more than 50,000 maternal deaths a year world-wide are caused by preeclampsia. Leading maternal symptoms are hypertension andproteinuria. Additionally the central nervous system, liver, kidney, and coagulation system can be affected. The rate of fetal complication depends mostly on gestational age at the time of delivery. Fetal morbidity is caused by intra uterine growthrestriction (IUGR), small for gestational Age (SGA), placental abruption and pre-term births. The incidence of perinatal and neonatal deaths is increased as well. Early onset PE(<34 weeks of gestation) is more often accompanied with a high complication rate and with severe consequences of preterm deliveries compared to the late onset form of disease.(2,4,7) Hypertensive disorders of

pregnancy complicate about 8% of all gestation andare responsible for significant maternal and perinatal morbidity and mortality.[2Preeclampsia is a common pregnancy specific syndrome that originates in placenta and is associated with fetal risks (growth restriction , prematurity, death) and maternal risks (cerebrovascular, cardiac, hepatic and renal complications), while hypertension without proteinuria generally has a far more benign course[(6)]. Preeclampsia is defined as hypertension associated with proteinuria, greater than 0.3 g/L in a 24 hour urine collection or 1 + by qualitative urine examination after 20weeks of gestation.[(7)] Mild preeclampsia is defined as diastolic blood pressure less than 110mm Hg andsystolic blood pressure less than 160mm of Hg and severe preeclampsia is defined assystolic blood pressure of 160mm of Hg or more and diastolic blood pressure of 110mm of Hg or more [(6)].

It affects 3-5% of all pregnancies. In India there is 5-15% incidence of preeclampsia. It causes 10-15% maternal deaths in the developing countries.[(6)] The reasons for increased maternal mortality and morbidity in developing countries are social deprivation, lack of access to trained birth attendants, lack of education, late referral to tertiary care centres, lack of transport, unbooked status of the patient, nulliparity, prolonged state of unconsciousness, and multiple seizures prior to admission [(9)]. In the case of prematurity however it is a major cause of neonatal morbidity and mortality. Identification of patients at risk for preeclampsia is importantfor several reasons. Firstly it enables the clinician to counsel the patient, if possible even before pregnancy. Secondly it might discriminate preeclampsia, a disorder withlife threatening maternal consequences and danger for the fetus, from transient gestational hypertension-medically a generally benign disorder with mild to moderateelevation of blood pressure. A major concern in the identification of the clinical risk factors for women at risk of preeclampsia is the confusion over clinical classificationof this syndrome which results in the use of various definitions in the recent years.

Objectives

To study the maternal outcome in women with pre-eclampsia remote from term i.e early onset pre-eclampsia (between 20-34 weeks of gestation) and to compare the maternal outcome in women with pre-eclampsia near term i.e late onset pre-eclampsia(between 34-42 weeks of gestation) with reference to age, parity, severity of pre- eclampsia, mode of delivery, complications and laboratory parameters like liver enzymes, platelet count, uric acid level . To study the perinatal outcome in women with pre-eclampsia remote from term i.e early onset pre-eclampsia (between 20-34 weeks of gestation) and to compare the perinatal outcome in women with pre-eclampsia near term i.e late onset pre-eclampsia (between 34-42 weeks of gestation) with reference to birth weight, NICU admission, perinatal complications and mortality.

Material and Methods

This cohort study was carried out in the department of Obstetrics and Gynaecology of Darbhanga medical college and Hospital Darbhanga Laheriasarai, Bihar. Study duration of Two Years. 100 antenatal women attending antenatal outpatient department as well as women admitted to obstetric ward and labor room were assessed and enrolled in the study as per the formulated inclusion and exclusion criteria after counselling and taking written informed consent. A through clinical history and examination was done. All the women were investigated (routine and specific for PE), followed up tilldelivery and maternal and perinatal outcomes were noted. The diagnosis of PE was done according to NHBPEP working group on high blood pressure[(7)]

*Chronic HTN (BP> 140/90mm of Hg before 20 weeks of gestation)
*Gestational HTN (BP>140/ 90mm of Hg after 20 weeks)
*Preeclampsia (PIH +Proteinuria > 300 mg/dl)
*Eclampsia (Preeclampsia + seizures)
*BP ≥ 160mm of Hg systolic or ≥ 110mm of Hg diastolic
*Proteinuria >5gm/dl, Oligouria defined as <500 ml per 24 hours, Cerebral / visual disturbances, Impaired liver function, Thrombocytopenia

Inclusion criteria
***Patients booked in the first trimester with known first trimester BP record.
*Pregnant women between 20-42 weeks of gestation.
*Blood pressure ≥140mm of Hg systolic and ≥90mm of Hg diastolic withproteinuria: diagnostic of preeclampsia.
*Singleton pregnancy

Exclusion criteria
***Gestational age <20 weeks or > 42 weeks
*Multifetal gestation, Women who are neither sure of their dates nor having early USG
*Known case of essential hypertension, Known case of renal disease, Gestational hypertension

Methods
Women in both the groups were studied for demographic data such as age, gravity, family history and severity of preeclampsia. As per case record form thorough clinical examination including BP, edema, pallor etc was done. Detailed obstetric examination was done in the form of obstetric palpation, presentation, amount of liquor and fetal heart sounds. All the women wereinvestigated(routine and specific for PE), managed according to the hospital protocol,followed up till delivery and maternal and perinatal outcomes were noted. The womenonce diagnosed as PE they were hospitalized, investigated for PE and they were managed with antihypertensive as per hospital protocol. They were followed up withBP record, investigations and clinical examination. The worsening of disease was the indication for termination of pregnancy. Maternal outcome was noted in terms of severity of PE, maternal complications like Abruptio placetae,, HELLP syndrome, eclampsia, DIC, ARF, pulmonary edema and maternal mortality. The perinataloutcome was noted in the form of birth weight, IUGR, birth asphyxia, NICUadmission and perinatal mortality.

Results

Table 1: Distribution of number of women into two groups

Group	Study Group	No. of women	Percentage (%)
Group 1	PE remote from term or early onset PE (20-34 weeks of gestation)	50	50%
Group 2	PE near term or late onset PE (35-42 weeks of gestation)	50	50%
Total Number of women		100	100%

That total of 100 women with preeclampsia were included in study andwere distributed into two groups. Group 1 : 50 women with preeclampsia remote from term or early onset PE i.e. 20 to34 weeks of gestation. Group 2: 50 women with preeclampsia near term or late onset PE i.e. 35 to 42 weeksof gestation

Table 2: Association of subjects according to gravidity

		No. of women (%)		Total (%)
		Group1	Group2	
Gravidity	Multigraviade	24 (48%)	26 (52%)	50 (100%)
	Primigraviade	26 (52%)	24 (48%)	50 (100%)
Total		50 (50%)	50 (50%)	100 (100%)
Chi Square test value		0.16		
'p' value		O.689157 NON SIGNIFICANT		

Association of subjects according to gravidity between the groups. Primigravidae were more in group 1 and Multigravidae were more in group 2.Further it was observed that there was no statistically significant difference ofgravidity between the two groups.

Table 3: Association of AST values between the groups

		No. of women (%)		Total (%)
		Group1	Group2	
AST (IU/ml)	≤40	5 (17.9%)	23 (82.1%)	28 (100%)
	>40	45 (62.5%)	27 (37.5%)	72 (100%)
Total		50 (50%)	50 (50%)	100 (100%)
Chi Square test value		16.0714		
P Value		0.000061 SIGNIFICANT		

The association of AST between the two groups. It was found that serum AST was raised in 45 (62.5%) women in group 1 whereas in the group 2 it wasraised only in 27 (37.5%) women, whereas women having normal serum AST were 5(17.9%) & 23 (82.1%) in group 1 and in group 2 respectively.

Table 4: Association of maternal complication in between two groups.

Complications	No. of women (%)		Total (%)	'Z' score	'p' value
	Group 1	Group 2			
HELLP	19 (38%)	11 (22%)	30 (30%)	1.7457	0.04006 SIGNIFICANT
Abruptio Placenta	10 (20%)	4 (8%)	14 (14%)	1.7292	0.04182 SIGNIFICANT
Eclampsia	9 (18%)	8 (16%)	17 (17%)	0.2662	0.39358 NONSIGNIFICANT
IUGR	20 (40%)	12 (24%)	32 (32%)	1.715	0.04363 SIGNIFICANT
IUD	11 (22%)	4 (8%)	15 (15%)	1.9604	0.025 SIGNIFICANT
Pulmonary Edema	0	0	0		
DIC	0	0	0		
ARF	0	0	0		
Maternal Mortality	0	0	0		

It was observed that most common complication associated with group was IUGR followed by HELLP syndrome, IUD, abruption placentae, eclampsia. Most common

complication associated with group 2 was also IUGR followed by HELLP syndrome, eclampsia, abruption placentae, IUD. Statistically significant complications between two groups were HELLP syndrome, abruption placentae, IUGR & IUD as reflected by 'p' value in above table. It was further observed that maternal complications were noted more in group1 than in group 2. HELLP syndrome was noted in 30 (30%) women overall. In group 1, 38% women had HELLP syndrome and when compared with group 2 (22%)it was statistically significant. Abruption placentae were noted in 14 (14%) women inthe study. Group 1 comprised women having gestational age <34 weeks, so they were ought to have LBW babies unless and they were prolonged & delivered at full term gestation (with antihypertensive drugs). For similar reason, prenatal mortality andNICU Admissions were also noted more in the group 1 due to resultant prematurity.

Discussion

Preeclampsia is common pregnancy specific syndrome that originates in placenta and is associated with fetal risks (growth restriction, prematurity, death) and maternal risks (cerebrovascular, cardiac, hepatic and renal complications), while hypertension without proteinuria generally has a far more benign course[6]. It usuallydevelops after 20 weeks of gestation and resolves after delivery of placenta[10]. It remains a major cause of maternal and fetal/neonatal morbidity and mortality. Everythird case of obstetric morbidity and more than 50,000 maternal deaths a year world-wide are caused by Preeclampsia. The rate of fetal complications depends mostly ongestational age at the time of delivery. Fetal morbidity is caused by intra uterine growth restriction(IUGR). small for gestational age (SGA), placenta abruption and pre-term births. The incidence of perinatal and neonatal deaths is increased as well. Preeclampsia remote from term i.e. early onset PE (<34 weeks of gestation) is more often accompanied with a high complication rate and with severe consequences of preterm deliveries compared to the late onset form of disease.

Showing distribution of cases according to age distribution in variousstudies

Study	**Mean age (in years)**		
Peter Von Dadelszen (2009)	26.6	±	5.6
Rathore R, Butt M.F.et al (2010)	28.2	±	5.2
Vitthal Kuchake et al (2010)	25.5	±	2.4
Tavassoli Fatemeh et al (2010)	22.4	±	4.62

*In a study carried out by Peter Von Dadelszen et al [11] in 2009 for Preeclampsia integrated estimated risk study in 2009, at the department of obstetrics and gynecology, university of Colombo, Vancouver, Canada it wasobserved that the mean age in preeclampsia was 26.6±5.6 yrs of age. *In a study conducted by Rathore R, Butt et al at king Edward Medical University, Mayo hospital, Lahore in 2010 mean age in women with PE was 28.2 ±5.2yrs. Vithahal Kuchake et al [12] conducted a study in 2010 at department of clinical pharmacy, R.C. Patel institute of pharmaceutical education and research, Shripur, Dhule, India, the mean age was observed as 25.5 ±2.4 yrs. Tavassoli Fatemeh et al[13] conducted a study on maternal and perinatal outcome in women with pregnancy hypertension at department of obstetrics and gynecology, Imman Reza hospital, Mashhad university, Iran, the mean age noted was 22.4 ± 4.62 yrs. In a study conducted by Mandana Saadat et al[14] in dept of Obstetrics and Gynecology, Bandarabbas university of medical science, Tehran, Iran in 2005- 2006 where 1235 patients with PE were studied, 70% patients delivered vaginally and in 30% cases LSCS was performed. In a study conducted by Rathore R, Butt NF et al at King Edward Medical University, Lahore in 2007-2008 regarding complications and

outcome of preeclampsia and eclampsia where 100 patients were studied, 85% patients had avaginal delivery whereas in 15% patients LSCS was performed. Vithhal Kuchake et al conducted a study in 2010 at department of clinical pharmacy, R.C. Patel institute of pharmaceutical education and research, Shripur, Dhule, India where 73 preeclampsia patients were studied, 34.24% delivered vaginally and 65.75% women underwent LSCS. In the present study 50.9% women in group 1 and 49.1% women in the group 2 delivered vaginally whereas women undergoing LSCS were 48.8% and 51.2% ingroup 1 and group 2 respectively.

Showing association of subjects according to maternal mortality

Study	Maternal mortality
Sandhu et al (2010)	8.3%
Rathore R et al (2010)	24%

In a study conducted by Sandhu et al [15] in 2008 maternal mortality was observed in 8.3% cases.
In another study by Rathore R, Butt NF et al , regarding complications andoutcome of preeclampsia and eclampsia presenting to medical wards of Mayohospital at King Edward medical university Lahore in 2007-2008 maternal mortality observed was 24% cases. In the present study there was no maternal mortality.

Conclusion

This study concludes that women with Preeclampsia remote from term i.e. early onset preeclampsia is associated with more maternal and perinatal complications, the relative risk of developing obstetrical complications in preeclampsia remote from term is 2 times more than in late onset preeclampsia. Though preeclampsia is not a preventable obstetric condition but the severityof complications associated with early onset preeclampsia and the related morbidity and mortality can be reduced by providing timely and proper antenatal care.

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