

Maternal and Perinatal Outcome in Patients with Preeclampsia

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ABSTRACT

Aim: To evaluate perinatal outcome in neonates born to preeclamptic women.

Methods: Study was performed on 50 normotensive women & 50 women with preeclampsia coming to the emergencies of Lady Wallingdon & Lady Aithcison hospitals, Lahore. The basis of selection and distribution of preeclamptic patients into groups was based on diastolic blood pressure ranging from 90-130 mm Hg. Babies born to these mothers were assessed for IUGR, birth weight, gestational age & necessity for admission to ICU. Perinatal mortality was noted.

Results: The most common presenting feature of the women coming to the emergency in all groups was labor pains. The number of patients undergoing C-section progressively increased with mounting BP. 20.8% children in Group C (diastolic BP 101-115 mm Hg) & 40% in Group D (diastolic BP 116-130 mm Hg) suffered from IUGR. Post-natal death accounted for 9%, 12.5% & 13.3% in Groups B, C, & D respectively. The mean birth weight & APGAR score was significantly reduced in the severe preeclamptic groups.

Conclusion: Hypertensive disorders of pregnancy are associated with high fetal morbidity and mortality. Antenatal care will help in early diagnosis and timely intervention of the cases.

Keywords: Preeclampsia, IUGR, APGAR score, birth weight, gestational age.

INTRODUCTION

Preeclampsia is uniquely a disease of pregnancy. It increases perinatal mortality five folds and is the leading cause of maternal mortality in the Western World¹. It is estimated to affect 7-10% of all pregnancies in the United States of America and 5-7% throughout the world².

Preeclampsia is associated with hypertension and protein urea. Hypertension is defined by Obstetricians as systolic blood pressure of 140mm Hg or diastolic blood pressure of 90mm Hg measured at rest on two different occasions at least six hours apart³. This hypertension when accompanied by protein urea of 300mg/24hrs or 300mg/L with or without edema is Preeclampsia^{4,5}.

Pre-eclampsia is primarily, although not exclusively confined to the young women in their first pregnancy⁶. It most commonly occurs in the last trimester of pregnancy⁷. It develops during pregnancy and remits after delivery, implicating the placenta as a central culprit. Other factors include genetic predisposition, maternal immune response & maternal vascular disease⁸. The precise etiology is however not known⁹.

Preeclampsia is a major cause of maternal and prenatal mortality and morbidity¹⁰ it. Produces potentially lethal complications including placental ablation disseminated intravascular coagulation, intracranial hemorrhage, hepatic failure, acute renal failure, and cardiovascular collapse¹¹. The offspring of women with hypertension during pregnancy experience higher rates of prematurity and low birth weight compared to healthy maternal controls¹².

Maternal and fetal surveillance is conducted at regular intervals and delivery is indicated for worsening maternal and fetal conditions¹³. Intrauterine fetal growth restriction (IUGR), lower 5min. APGAR score & intrauterine fetal demise are other related obstetric problems¹⁴. Special neonatal care is required for such babies which is associated with emotional and financial stress for both parents & health care authorities.

The incidence of recurrence of preeclampsia in future pregnancies is 10.3%. The incidence of development of chronic hypertension is 23.8%¹⁵. Another serious complication of preeclampsia is serous retinal detachment^{16,17} the incidence being 1-2%¹⁸.

MATERIALS AND METHODS

The study was carried out over a period of six months on pregnant women coming to the emergencies of Lady Wallingdon & Lady Aitchison hospitals in Lahore. 50 normotensive & 50 hypertensive women were included in the study. All these women were examined clinically in the emergency. Their medical

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history i.e., history of past illness, previous pregnancies, gravidity, parity, and treatment history was recorded on a proforma. Other salient features of the proforma included history of headaches, pain epigastrium, decreased fetal movements & sudden increase in weight. Data relating to neonate- weight, UGR, admission to ICU, still birth & death were also recorded on the proforma. Post labor, the new born was resuscitated and intensively monitored by the attending Pediatrician. The 5th minute APGAR score was calculated for all newborns.

The patients were checked for blood sugar, blood urea, creatinine, hemoglobin, protein urea and liver function tests. Cases with a range of diastolic blood pressure between 86-130 mmHg, edema and protienura were allocated the preeclamptic group. Proteinuria was taken as excretion of 300 mg protein or more over 24 h or 2 readings of 1+/more on dipstick analysis of midstream urine / catheter specimen of urine if 24-hour collection result was not available. Proteinuria of >+1 was considered abnormal. Fundoscopy was done by a qualified ophthalmologist for all subjects to assess the ocular involvement. Patients on any kind of medications or the ones suffering from any concurrent diseases such as hypertension, diabetes mellitus etc. were excluded from the study. In normal pregnancy groups, only cases with blood pressure between 70-85 mm Hg without edema and protein urea were included. Blood pressures of all these women were checked half an hour after the arrival in the emergency and later after every half an hour until delivery. Mean of these readings was calculated. Patients were categorized into four groups. Group A (control group) had diastolic B.P ranging from 70-85 mm Hg, Group B between 86-100 mm Hg, Group C between 101-115 mmHg and Group D had blood pressure ranging from 116-130mmHg (Table 1). Statistical analysis was carried out using SPSS. ANOVA, Post hoc Scheff and Chi

RESULTS

Out of a total of 50 preeclamptic patients, 11 fell into Group B (22%), 24 in Group C (48%) and 15 in Group D (30%). All the women presented as un-booked case in the emergencies. Basic demographic & obstetrical data of control & preeclamptic patients is given in Table 2. Labor pains were the presenting features of all study groups. 16.6% cases in Group C & 20% cases in Group D presented with headaches while 9.1%, 12.5%, 13.3% women in Groups B, C & D respectively complained of decreased fetal movements (Table 3).

The percentage of ceaserian section progressively increased from Group A to D. No case of placental detachment documented in Groups A & B however in Groups C & D 4.1% & 13.3% cases respectively of placental detachment were observed. One woman developed pulmonary edema (Table 4).

Children born to mothers in Group C & D (16.6 & 33.3% respectively) required admission to ICU. 9.09%, 20.8% & 40% neonates of mothers in Groups B, C & D suffered from IUGR. There were 2% still born children in Group A & 13.3 % in Group D. Post natal complications resulted in the death of 9.1% babies in Group B, 12.5% in Group C & 20% in Group D (Table 5).

The APGAR score of babies born to mothers in Groups A & B were within normal limits but in Groups C & D it was significantly lower than Group A. The mean birth weight also dropped significantly in the children born to mothers in Groups C & D.

Table 1: Grouping of patients categorized according to the range of Blood pressure and the percentage of preeclamptic patients.

Parameters	Groups			
	A	B	C	D
BP Diastolic (mmHg)	70-85	86-100	101-115	116-130
No %age of pts	50	11(22%)	24(48%)	15(30%)

Table 2: Demographic & obstetrical data

	Range	Group A		Group B		Group C		Group D	
		n	%age	n	%age	n	%age	n	%age
Age (years)	< 25	16	32	6	54.5	11	45.8	9	60
	26-35	28	56	4	36.4	11	45.8	6	40
	36-45	6	12	1	9.0	2	8.3	-	-
Parity	0	10	20	2	18	1	4.2	4	26.6
	1-4	24	48	9	81.8	22	91.6	11	73.3
	>4	16	32	-	-	1	4.2	-	-
Gestational age (weeks)	28-30	-	-	-	-	1	4.1	6	40
	31-35	4	8	1	9	16*	66.6	8	53.5
	36-40	46	92	10	90.9	7	29.1	1	5.6

Table 3: Presenting features of patients

	Group A	Group B	Group C	Group D
Headaches	-	-	4(16.6%)	3(20%)
Decreased fetal movements	-	1(9.1%)	3(12.5%)	2(13.3%)
Pain epigastrium	-	-	2(8.3%)	-
Labor pains	34(68%)	8(72.2%)	8(33%)	6(40%)
Bleeding P/V	4(8%)	-	1(4%)	1(6.6%)
Leaking membranes	8(16%)	1(9%)	2(8.3%)	2(13.3%)

Table 4: Maternal outcomes

	Group A	Group B	Group C	Group D
Caesarean section	1(2%)	1(9%)	5(21%)	5(33.3%)
Placental detachment	-	-	1(4.1%)	2(13.3%)
Pulmonary edema	-	-	-	1(6.6%)

Table 5: Perinatal outcomes

	Group A	Group B	Group C	Group D
Admission to ICU	-	-	4(16.6%)	5(33.3%)
IUGR	-	1(9.09%)	5(20.8%)	6(40%)
Stillborn	1(2%)	-	-	2(13.3%)
Dead	-	1(9.1%)	3(12.5%)	2(13.3%)
Alive	49(98%)	10(99.9%)	23(96%)	11(73.3%)

Table 6: Mean values of birth weights & apgar score at 5 min of babies born to mother in the study

Groups	Diastolic BP(mmHg) of mothers	Mean birth weight of babies(kg)	Mean of APGAR scores (5 min) of babies
A (n= 25)	70-85	3.6 + 0.41	8 + .73
B(n= 11)	86-100	3.32+ 0.18	6.6 + 0.50
C(n= 24)	101-115	2.41+ 0.43**	4.9 + 1.04***
D(n= 15)	106 -130	2.02+ 0.45***	3.85 + 1.59***

*P < .05 Significant

** p < .01 Considerably significant

***P < .001 highly significant

DISCUSSION

Preeclampsia is major worldwide health problem causing an increased risk of perinatal and maternal morbidity and mortality¹⁹. Maternal age has an important influence on the hypertensive disorders of pregnancy. In our study 60% cases in Group D were < 25 years of age compared to 32% in normotensive Group A. These findings corroborated with those of other researchers²⁰.

An earlier study showed that gestational age in severe preeclamptic groups was significantly lower than control group²¹. We observe similar findings with 40% cases in Group D came between gestational ages 28-30 weeks. & the gestational ages of 31-35 week were observed in 66.6% cases in Group C & 53.5% mothers in Group D (Table 2)

In our study, labor pains were the most common mode of presentation in all groups. Similar findings were observed in another study²². This was followed by headaches & decreased fetal movements. (Table 3). Our findings were close to a study in Pakistan²³. We attribute this to similarity in cultural & socioeconomic conditions. The number of women undergoing cesarean section progressively increased with increase in the severity of

preeclampsia in our study. So was the case of abruptio placentae. One woman in Group D suffered from pulmonary edema (Table 4). These findings were different from the ones quoted in another study²⁴.

According to a study in Pakistan the overall perinatal mortality in hypertensive disorders of pregnancy is 13%²⁵. A study from Canada quoted lower results²⁶. We observed 13.3% still births & 13.3% deaths due to neonatal complications in severe hypertensive Group D. (Table 5). The main factor determining perinatal mortality in our study was lack of regular antenatal checkups & lack of awareness regarding significance of symptoms like decreased fetal movements. 16.6% neonates with mothers in Group C & 33.3% cases in Group D required admission to ICU. A study also carried out in Pakistan presented similar findings²³. Different results were quoted in another study²⁷. We attribute our findings to late arrival of the patients to the hospital resulting in post-natal complications like neonatal sepsis, hypoglycemia & jaundice. We observed IUGR in 9% babies with mothers in Group B, 20.8% & 40% in Groups C & D respectively (Table 5). Our findings were higher compared to other studies²⁸. The severity of hypertension could possibly be the cause in our study.

Researches have stressed upon the importance of low birth weight as a cause of infant morbidity & mortality future outcome in life^{29,30}. Our study showed that mounting maternal blood pressure severely affected the neonatal birth weight (Table 6). A rise in maternal blood pressure also adversely affected the APGAR score of the babies in our study. There was no significant difference in APGAR scores of children born to mothers in control & mild hypertensive Group B; however Groups C & D showed a significant decline in the APGAR score. Other studies are show a fall in Apgar score with increase in severity of preeclampsia³¹; their results do not match the severity of ours. Better antenatal care & improved management of the pregnant mothers in their setup could possibly be the reason for their result.

CONCLUSION

Health workers need to identify women at risk of pre-eclampsia and manage them appropriately so as to prevent the maternal and neonatal morbidity and mortality associated with this condition.

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