NEONATAL OUTCOME IN PRE-ECLAMPTIC PATIENTS

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Background: Pre-eclampsia (PE) is defined as hypertension (blood pressure of 140/90 mm Hg on two occasion 4–6 hour apart or single reading of diastolic blood pressure of >110 mm Hg) and proteinuria developing after 20 weeks of pregnancy up to 6 weeks post partum in previously normotensive, non-proteinuric women. The aim of this study was to determine the neonatal outcome in babies born of pre-eclamptic patients. **Methods:** It is a cross-sectional comparative study and was carried out in department of Obstetrics and Gynaecology unit C of Ayub Teaching Hospital, Abbottabad from 1st January 2007 to 30th June 2007. The study population included all cases presenting with pre-eclampsia after 20 weeks gestation to emergency and OPD and controls (Normal subject without pre-eclampsia). **Results:** A total of 73 cases of pre-eclampsia were recorded in study period and were matched for age, gestational age and parity with controls. Neonatal outcome data showed a perinatal mortality of 328 neonates per 1000 total births, major cause being still births and intrauterine death (IUD). Decreased APGAR score was present in 31 cases and 3 controls. **Conclusion:** Pre-eclampsia has great implication on adverse neonatal outcome. The various complications seen are low APGAR score, IUD, low birth weight, intrauterine growth restriction and increased need for admission to Neonatal Intensive Care Unit (NICU).

Keywords: Pre-eclampsia, Perinatal mortality, Eclampsia, IUGR, Still Birth, NICU, APGAR score

INTRODUCTION

Pre-eclampsia (PE) is defined as hypertension (blood pressure ~140/90 mm Hg on two occasions 4–6 hours apart or single reading of diastolic blood pressure of >110 mm Hg) and proteinuria developing after 20 weeks of pregnancy up to 6 weeks post partum in previously normotensive, non-proteinuric women.[1] Pre-eclampsia is a major cause of maternal and foetal mortality and morbidity.[2] Its incidence is 2–10% worldwide depending on population studied and definition of pre-eclampsia used. Precise aetiology of pre-eclampsia is still unknown.[3] Factors that appear to have a role include the abnormal placentation, maternal immune response, genetic predisposition, and maternal vascular disease.[3,4] If severe, it progresses to fulminant pre-eclampsia with headaches and visual disturbances and Haemolysis elevated liver enzymes and low platelets syndrome (HELLP syndrome) which are life threatening complications resulting in adverse maternal and neonatal outcome.

Women with mild pre-eclampsia generally have no symptoms, but when severe have signs and symptoms of renal insufficiency (oligouria, increased serum creatinine) elevated liver enzymes, headaches, visual disturbances, thrombocytopenia, DIC and convulsions.[5,6]

More maternal and neonatal complications were encountered in women in whom pre-eclampsia was severe and pregnancy had to be terminated earlier.[2]

PE is very frequently seen in our population; however local work is very sparse. Few studies have reported maternal and foetal morbidity and mortality associated with this condition.

The study was conducted to assess neonatal outcome of PE in Obstetrics and Gynaecology 'C' Unit of Ayub Teaching Hospital, Abbottabad from 1st January 2007 to 30th June 2007.

MATERIALS AND METHODS

The study was carried out in Gynaecology C of ATH over a period of 6 months from Jan 1– June 30, 2007.

This is a cross-sectional comparative study. The catchment population was 2.5–3 million population of Hazara division. Mostly the nature of admission was as emergency and referred from other hospitals usually in critical condition. A total 73 cases, confirmed of pre-eclampsia (at term, i.e., 37 completed weeks) were admitted during study period, along with 73 normal subjects as control (gestational age matched and no evidence of PE). The data was collected through a proforma. The salient features of proforma included name, age, obstetrical history, history of present illness including headache, visual disturbance, pain epigastrium, increased blood pressure on antenatal check-up, decreased foetal movements and past and personal history of pre-eclampsia, the findings of general physical examination (GPE) and systemic examination specially abdominal and vaginal examination.[6,7] Patients were assessed on the basis of history, clinical examination, ultrasound and laboratory investigations.

Diagnosis of pre-eclampsia was based on history, examination and lab investigations including urine albumin, serum uric acid, clotting time and platelet count, Renal Function Tests and Liver Function Tests.

RESULTS

A total of 1039 patients were admitted for deliveries during this period from Jan 1, 2007 to June 30 2007. 73 patients were diagnosed as having pre-eclampsia. Thus the frequency of 70 cases of pre-eclampsia per 1000 deliveries was present, giving an incidence of 7.02%.

All cases of pre-eclampsia presented as un-booked emergencies. Basic demographic and obstetrical data of the patient and controls is given in Table-1.

Table-1: Basic Demographic Data

Variables	Ranges	No. of cases	Percentage
Age (Yrs)	<25	20	27.39
	25–35	37	50.68
	36–45	16	21.91
Parity	0	28	38.35
	1–4	34	46.57
	>4	11	15.06
Gestational Age (wks)	37–40	63	86.30
	40–42	8	10.95
	>42	2	2.73
Past History of pre-eclampsia		4	5.47
Family History of pre-eclampsia		1	1.36

Majority of patients had no significant past personal or family history of pre-eclampsia except for 3 patients having personal history of pre-eclampsia and one with positive family history of pre-eclampsia. One patient had eclampsia in past. Main presenting features of cases are documented in Table-2. The most common symptoms in cases were labour pains followed by eclampsia. The blood pressure is presented in Table-3. Babies born to cases were alive in 52 (71.24%) instances and in case of controls 72 (98.64%) babies were born alive (Table-4).

Table-2: Presenting features of Patients

Variables	No. of cases	%
Decreased Foetal movements	8	10.95
History of Convulsions	10	13.69
Headache	9	12.32
Pain Epigastrium	3	4.10
Labour Pains	24	32.87
PV Bleeding	9	12.32
Leaking Membranes	4	5.47
Visual Disturbances	4	5.47

Table-3: Systolic BP of cases and controls

Case or Control Group		N	Mean±SD
Diastolic Blood Pressure	Case	73	106.68±13.838
	Control	73	69.86±6.769

Table-4: Condition at Birth (Alive or dead)

	Case		Control		Total	
Condition at Birth	**No.**	**%**	**No.**	**%**	**No.**	**%**
Alive	52	71.24	72	98.64	124	84.93
Dead	21	28.76	1	1.36	22	15.07
Total	73	100	73	100	146	100

p= 0.0001

Babies born to both cases & control were also assessed for APGAR score at birth. 31 (42.46 %) babies had APGAR Score <6 while in controls only 3 babies had APGAR Score <6 (Table-5).

Table-5: APGAR Score at 5 minutes Cross tabulation

	APGAR Score at 5 minutes	
Cases/Controls	**<6**	**>6**
Cases (n=73)	31	42
Controls (n=73)	3	70
Total	34	112

p=0.0001

In One case of pre-eclampsia, the Mean±SD of birth weight was 2.9±0.63 kg, whereas in control Mean±SD of weight was 3.0±0.49 (Table-6).

Table-6: Birth weight

Cases/Controls	Mean	SD
Cases (n=73)	2.9205	0.63661
Controls (n=73)	3.0658	0.49839

Nineteen neonates of cases required admission to NICU while in control group only 7 required such admission (Table-7).

Table-7: Need for admission to NICU

	Need for Admission to NICU	
Cases/Controls	**Yes**	**No**
Cases (n=73)	19	54
Controls (n=73)	7	66
Total (n=146)	26	120

Both neonates of cases & controls were assessed for evidence of IUGR which was found in 7 cases (22.37%) and 1 (1.36%) newborns of control groups (Table-8).

Table-8: Intrauterine growth restriction Cross tabulation

	Intrauterine growth restriction	
Cases/Controls	**Yes**	**No**
Cases (n=73)	7	66
Control (n=73)	1	72
Total (n=146)	8	138

p=0.029

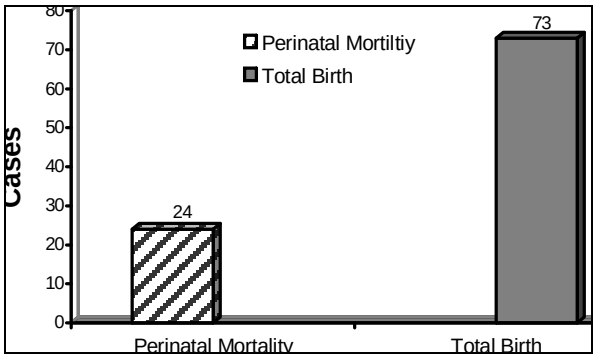

Figure-1: Perinatal Mortality

DISCUSSION

The results of present study indicate the frequency of pre-eclampsia to be 7.02% in our setting which in the same as reported by many international studies.[1,2] Pre-eclampsia was associated with no maternal mortality but higher frequency of maternal morbidity was encountered.

According to a study from Pakistan, the overall perinatal mortality in hypertensive disorders of pregnancy (including pre-eclampsia) is 13%[7], the major causes being prematurity and low birth weight babies who need NICU care.

Low APGAR score was seen in 31 (42.46%) cases as compared to controls (4.10%)[4,8,9] and there was high need for admission to NICU (26.02%) in cases compared to controls (9.5%). Frequency of Pre-eclampsia was 7.02% which is significantly higher than expected value of 2.10% quoted in global literature.[5]

Main factor determining perinatal mortality was the lack of regular antenatal checkups, complicated cases of pre-eclampsia and lack of awareness regarding significance of symptoms like decreased foetal movements and late arrival at hospital, all contributing to stillbirths.

In our study the above mentioned factors for perinatal mortality were not significant as patients selected were all at term. Here the major cause of perinatal mortality was still birth. Other causes of perinatal mortality were early neonatal deaths which were equal in cases and controls. Causes of early neonatal death were haemetemesis, hypoglycemia and sepsis. Only one baby was congenitally abnormal (meningomyelocele).

IUGR was present in 9.5% of cases and significantly high difference was observed from controls (1.36%).[11]

Patients presenting with IUD presented with history of decreased foetal movements.

Different post natal complications encountered in babies of case were jaundice, sepsis, need for IV antibiotics for early neonatal sepsis & hypoglycaemia. Causes of early neonatal deaths in cases were hypoglycaemia, haematemesis and early neonatal sepsis, while causes of early neonatal death in controls were meconium inhalation.[8,11]

All cases of PE were managed according to multidisciplinary approach involving a physician, anaesthetist and gynaecologist.

CONCLUSION

Pre-eclampsia tends to threaten maternal health and foetal viability adding to maternal and neonatal mortality and morbidity. There is a high frequency of pre-eclampsia in our setting and the consequences of pre-eclampsia for neonatal mortality and morbidity outcome are alarmingly high.

There is need for patients' education in recognizing the warning symptoms of severe pre-eclampsia before the IUD of foetus occurs or mother develops one of the grave complications. Public health awareness, the education of primary health workers and improvement of socio-economic circumstances can also help to improve maternal and neonatal prognosis.

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