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OUTCOME OF PREGNANCY IN WOMEN WITH SEVERE PRE-ECLAMPSIA

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ABSTRACT

Introduction : Pre-eclampsia is one of the major cause of maternal and fetal morbidity and mortality and accounts for the majority of referrals of obstetric day care unit and hospital admissions.

Objective : To evaluate the maternal and fetal outcome of pregnant woman with severe pre-eclampsia.

Study in Design : Descriptive study.

Place and Duration of Study : Department of Obstetrics and Gynaecology Unit II of Liaquat University of Medical and Health Sciences, Hyderabad from 1st July 2007 to 30th September 2008.

Methodology : Total 75 women with severe pre-eclampsia after 20 weeks of gestation were included while women with mild pre-eclamsia, eclampsia, essential hypertension, epilepsy and acute fatty liver of pregnancy were excluded. All relevant features like age, parity, booking status, gestational age and fetomaternal outcome were recorded on pre-designed proforma and the data was entered on SPSS in the form of frequency distribution tables and percentages were calculated.

Results : During the study period, there were 3980 Obstetric admissions among them seventy five patients presented with severe pre-eclampsia thus represents the frequency rate of 1.88% or 1 in 53 deliveries.

Most of the women 52(69%) were between 20-30 years of age. About 35(46.6%) were primigravida. Majority 44(58.7%) were unbooked. . 48(64%)women were presented at 31-37 weeks of gestation. Headache was most common complaint in 49(65.3%) followed by epigastric pain, blurring of vision and weight gain. 60(80%) women had blood pressure >160/110mmHg at the time of admission. Common mode of delivery was Caesarean section in 55 (73.3%) women. Pre-eclampsia related complications were placental abruption occurred in 9(12%), eclampsia in 3 (4%) and renal failure seen in 2(2.7%) women. There were 3(4%) maternal deaths. Perinatal outcome was poor due to severe pre-eclampsia. 14 were intrauterine deaths and 18 were neonatal deaths.

Conclusion : Severe pre-eclampsia was quite common in our setup. Low birth weight and prematurity were major reason for poor perinatal outcome. Maternal morbidities were also common in patient with severe pre-eclampsia. Adequate assessment, investigation, monitoring and intensive care for these women in the antepartum, intrapartum and postpartum period and timely delivery improves significantly the maternal and perinatal outcome.

Keywords : Severe pre-eclapmsia, prematurity, maternal and perinatal mobidity and mortality.

INTRODUCTION

Pre-eclampsia is defined by new onset of elevated blood pressure and proteinuria after 20 weeks of gestation.[1] It is considered severe if blood pressure and proteinuria are increased substantially or symptoms of end organ damage (including fetal growth restriction). It may develop before 20 weeks of gestation in case of hydatidiform changes in chorionic villi or in the presence of lupus anticoagulants.

It complicates 3-5% of first pregnancies and 1% of subsequent pregnancies and around 5 to 10% of cases being severe.[2] It is second most common cause of maternal mortality in United States after thromboembolic phenomenon. It has been estimated by World Health Organization (WHO) that world wide approximately 60,000 women will die each year from pre-eclampsia.[3] However, in developed countries, the impact is primarily on the fetus where perinatal mortality is increased 5-fold and indicated preterm deliveries for pre-eclampsia account for 15% preterm births.[4] Incidence of pre-eclampsia is unknown but varies from 5 to 8%.[1,2 ,5] In pre-eclampsia, there is deficient placentation, resulting release of one or more factors which damage vascular endothelial cells throughout the maternal circulation leading to multisystem dysfunction.

There is currently no single reliable, cost effective screening test for pre-eclampsia and there are no well established measures for primary prevention.[6,7] Delivery remains the ultimate treatment for pre-eclampsia to prevent potential maternal complications.[6] However, delivery is not always in best interest of fetus. The rationale for delaying delivery in these pregnancies, is to reduce perinatal morbidity and mortality by delivery of more mature fetus and to lesser degree to achieve more favourable cervix.[8] Access to perinatal care, early detection of the disorder, careful monitoring and appropriate management are crucial elements in prevention of pre-eclampsia related deaths.

Pre-eclampsia is associated with increased risk of placental abruption, acute renal failure, cerebrovascular and cardiovascular complications, disseminated intravascular coagulation, pulmonary edema, hepatic failure, HELLP syndrome, eclampsia, retinal detachment, aspiration pneumonia and maternal death. Fetal morbidities include preterm delivery, small for gestation, intrauterine growth restriction (IUGR), still births, low birth weight babies.

Our unit being a part of tertiary care centre, receives many complicated cases as emergency from peripheral, maternity clinics and nursing homes not only from Hyderabad city but also from remote areas. This study will access the contribution of severe pre-eclampsia to maternal and fetal morbidity and mortality and will help us to adopt the measures to reduce it.

METHODOLOGY

This study was conducted in Department of Obstetrics and Gynaecology Unit II of Liaquat University of Medical and Health Sciences Hospital, Hyderabad. Over a period of 15 months from 1st July 2007 to 30th-September 2008. Total admissions during this period were 3980 out of which 75 were cases of severe pre-eclampsia. A preformed proforma was used to collect the data. Each case record was analysed in detail as regards to frequency, age, parity, booking status, gestational age, associated risk factors, past and family history of pre-eclampsia, condition at the time of examination, history of present pregnancy and current events (e.g. sign and symptoms of imminent eclampsia like headache, blurring of vision, epigasrtic pain, nausea, vomiting) were taken followed by Systemic examination as well as Obstetric examination including symphysiofundal height measurement, lie and presenting part, amount of liquor was carried out to access severity of pre-eclampsia.

Necessary routine investigations like complete blood picture and platelet count, clotting profile, renal and liver function test, random blood sugar, lactate dehydrogenase and urine for protein were carried out. Gestational age was calculated using sure menstrual dates, confirmatory ultrasound before 20 weeks of gestation. Ultrasound was done at the time of admission if no previous scan was available. Strict fetomaternal monitoring was done , including daily estimation of blood pressure, proteinuria by dipstick or 24 hours urinary protein, daily fetal movement count, serial ultrasound and cardiotocography were performed and antihypertensive were started if patient was not already taking it. Biophysical profile and umbilical artery Doppler were done on weekly basis. Corticosteroid were administered if delivery was planned before 34 weeks gestation. All the managements were recorded and progress was noted. The decision regarding timing and mode of delivery were individualized. The patients with uncontrolled hypertension were managed in collaboration with physician. Neonatal care was provided by paediatrician from delivery onwards.

The patients were kept in the recovery room or postnatal ward after delivery and were closely observed for improvement or deterioration. The dose of antihypertensive drug was modified and advised to come for followup.. The morbidity and mortality resulting from severe pre-eclampsia and its related complication were noted. All information was documented in predesigned proforma.

Results were analyzed through computer software programme SPSS version 10 and percentages were used to describe the results.

RESULTS

During the study period, there were 3980 Obstetrical admissions. Among them seventy five women had severe pre-eclampsia thus represents the frequency rate of 1.88% or 1 in 53 deliveries.

Demographic figures including maternal age, parity, gestational age, booking status are shown in Table-1. Most of the patients 52(69%) were 20-30 years old, 35(46.6%) were primipara. Majority 44(58.7%) were unbooked. Mostly 48(64%) were between 31-37 weeks of gestational age and 17(22.27%) women were presented after 37 weeks of gestational age while 10 (13.3%) women were presented before 31 weeks of gestation.

Regarding blood pressure 60(80%), women had blood pressure >160/110mmH and remaining 15(20%) had blood pressure 0f 160/110mmHg.

Headache was a frequent complaint as observed in 49 (65.3%) patients followed by epigastric pain, blurring of vision and weight gain. Majority 30(40%) women had proteinuria of +3,about one third of women 25(33.3%) had proteinuria of +2, 15(20%) had +1 and 5(6.7%) women had of +4 proteinuria. Majority 40(53.3%) of women had hyperreflexia. There were previous positive history of pregnancy induced hypertension in 8(10.7%) women, pre-eclampsia in 8(10.7%) and eclampsia in 5(6.7%) women. 8(10.6%) of women with severe pre-eclampsia had twin pregnancy.

Caesarean section was the common mode of delivery in 55(73.3%) women. However 20(26.7%) delivered by spontaneous vaginal delivery. Induction was given in 5(6.7%) women among them. It failed in 2 patients who ended up in caesarean section. Uncontrolled blood pressure was common indication for caesarean section in 19(34.5%) women followed by fetal distress in 10(18.2%), intrauterine growth restriction in 6(11%) and 4(7.3%) women had section due to twin pregnancy (Table-2).

Table-3 shows the maternal morbidities. Placental abruption was common observation due to severe pre-eclampsia in our study seen in about 9(12%) women, eclampsia in 3(4%), chest infection in 3(4%), HELLP syndrome in 2(2.7%), acute renal failure in 2 (2.7%), cerebrovascular accident in 2 (2.7%), urinary tract infection in 2 (2.7%).

TABLE # 1:
SCIODEMOGRAPHIC CHARACTERISTICS OF PATIENTS
(N=75)

Characteristics	Number	Percentage
Age (years)		
<20	4	5.3
20-25	29	38.7
26-30	23	30.7
31-35	7	9.3
>35	12	16
Parity		
Primipara	35	46.6
Multipara	23	30.7
Grand multipara	17	22.7
Gestational age(weeks)		
25-30	10	13.3
31-37	48	64
>37	17	22.7
31	10	13.3
Booking status		
Unbooked	44	58.7
Booked	31	41.3

TABLE # 2:
INDICATIONS OF CAESAREAN SECTION

Indication	Number	Percentage
Uncontrolled blood pressure	19	34.5
Fetal distress	10	18.2
Severe IUGR (intra uterine growth restriction)	06	11
Twin pregnancy	04	7.3
Breech	04	7.3
Non progress of Labour	04	7.3
Cephalopelvic disproportion (CPD)	03	5.4
Placental abruption	03	5.4
Failed induction.	02	3.6

TABLE # 3:
MATERNAL MORBIDITIES AND MORTALITY

Maternal Morbidities	Number	Percentage
Placental abruption	9	12
Eclampsia	3	4
Chest infection	3	4
Hemolysis ,elevated liver enzyme low platelet (HELLP syndrome)	2	2.7
Acute renal failure	2	2.7
Cerebrovascular accident	2	2.7
Urinary tract infection	2	2.7
Disseminated intravascular coagulation	1	1.3
Pulmonary embolism	1	1.3
Aspiration pneumonia	1	1.3
Blindness	1	1.3
Deep venous thrombosis	1	1.3
Causes of maternal mortality n = 3/75 (4%)	**Number**	**Percentage**
Renal failure	1	33.3
Pulmonary embolism	1	33.3
Cerebrovascular Accident	1	33.3

TABLE # 4:
FETAL OUT COME.

Total number of babies = n = 83 (75+8 twin)
Alive babies = 51 (61.4%)

	Perinantal mortality (PNM)	
Intrauterine deaths (IUDS)	14	
Neonatal Death	18	38.6
Total	32	

There were 3(4%) maternal deaths due to severe pre-eclampsia. The causes of maternal mortality were renal failure, pulmonary embolism and cerebrovascular accident (Table-3).

During study period, 83 babies born including 8 twins, out of which perinatal loss was 38.6% (14 were intrauterine deaths (IUDS) and 18 were neonatal deaths), 51(61.4%) remain alive at the time of discharge (Table-4).

Prematurity was commonly seen in 45(54.2%) babies. The causes of neonatal deaths were low apgar score (<6 in 5 minutes) in 8 (44.4%) babies, IUGR (Intra uterine growth restriction) in 4 (22.2%), birth asphyxia in 4 (22.2%), respiratory distress in 1(5.6%) and neonatal sepsis seen in 1(5.6%) baby.

DISCUSSION

Severe pre-eclampsia still complicates a substantial number of pregnancies in the third world countries and is a significant cause of Obstetric morbidity and mortality. It is most common cause of death in parturition.

There were total 3980 deliveries and 75 were the cases of severe pre-eclampsia. The frequency of pre-eclampsia in our study is 1.88% or 1 in 53 deliveries while it varies between 2.5 to 10% in different studies.[2,9,10,11,12] The reason for low incidence is that this is hospital based study. Majority of patients with severe pre-eclampsia do not report in hospital.

The highest frequency of severe pre-eclampsia in this study was among primipara 35(46.6%). The findings are in good agreement with observations in Razia's study[2] while it was very high in

other different studies.[11,13]

Maximum cases were seen in age group of 20-30 years 52(69%). The same was reported at Nishtar Hospital Multan[2] while 9.3% of these cases were above the 35 years of age while it was lower than the study at Multan where it was about 16%.[2]

In our study most of women 44(58.7%) were un-booked having no antenatal care that indicates the lack of antenatal care is a major contributing factor for maternal and fetal morbidity and mortality with severe pre-eclampsia.

Regarding the gestational age 48(64%) women were presented between 31-37 weeks of gestation. The findings are in a good agreement with observation of Mohammad Tariq[14]. It means primigravidas, young parturients with 30-37 weeks of gestation are found to be affected more by pre-eclampsia.

In our study multiple gestation along with pre-eclampsia found in 8(10.7%) women. The association of multiple gestation with pre-eclampsia is also observed in Norway.[10]

The mode of delivery was determined on the basis of fetal condition, gestational age and state of cervix. 20(26.7%) women delivered vaginally, while it was closer with the study carried in South Africa[15] that is about 18.5% while lower than the study at Multan.[2]

Pre-eclampsia is incurable except by termination of pregnancy and it is an important cause of elective induction as to prevent drastic maternal and fetal consequences. Induction was given to 5(6.7%) women while it was very low than the study carried in South Africa.[15] Induction was successful in 3 patients while 2 patients ended in emergency Caesarean section.

World wide, there is an increased trend over the last two decade for abdominal deliveries and more than 45% of women with pregnancy induced hypertension had abdominal delivery. Caesarean section was common mode of delivery in 55(73.3%) women. It was closer to the study by DR Hall.[15] Out of 55 women 19(35%) women had caesarean section due to severe pre-eclampsia (i.e. uncontrolled blood pressure),10(18.2%) had caesarean section due to fetal distress while it was 44.4% in study carried in South Africa[15] that was higher than our study. Other Obstetrical indications for caesarean section were intrauterine growth restriction, twin pregnancy, breech, non progress of labour, cephalopelvic disproportion. Maternal indications were placental abruption and failed induction.

As pre-eclampsia is a multisystem disease, its complications involve almost all organ systems of the body. The recent report on the confidential Enquiry into Maternal Deaths in the United Kingdom (CEMD)[16] confirmed that hypertensive disorders of pregnancy continue to be a major contributor to maternal deaths. It revealed that 16 maternal deaths occurred due to complications of pre-eclampsia in the United Kingdom during the period 1997 to 1999. Seven of these deaths occurred as a result of a cerebral complications, intracranial haemorrhage being the single largest cause.

Regarding maternal morbidities, placental abruption was commonly occurred in 9 (12%)women that is quite closer with D.J Murphy's study,[17] while it is higher than the study by Sohinee Bhattacharya in which it was 2.8%[11] and lower than the study by DR Hall in which it was 20%.[15] Eclampsia was developed in 3 (4%) patients inspite of aggressive management while it was observed 6.3% of cases in hypertensive disorders of pregnancy in Military Hospital, Rawalpindi,[9] while 1.4% of cases at St Michael's Hospital, UK[17], 1.65% in Scotland[11] and none of patients of pre-eclampsia had eclampsia in study carried out in Multan.[2] Two (2.7%) patients developed HELLP syndrome in our study. However, it was very high about 21% in DJ Murphy's study[17] while 14% in severe hypertensive Illness in Pregnancy (SHIP) audit in UK[18] and 0.93% in Sohinee Bhattacharya study.[11] In our study renal complication was observed in 2 (2.7%) cases while it was higher 5% in Severe Hypertensive Illness in pregnancy (SHIP) Audit[18] and lower 0.84% in Sohinee Battacharya study.[11] Pulmonary edema was observed in 1.3% of cases in our study while it varies between 0.81% to 3% at UK.[11,18] Pre-eclampsia is a leading cause of maternal, and perinatal morbidity and mortality world wide causing 15% of all direct maternal deaths in the UK and 24% of all maternal deaths in India.[19,20]

Women still die of pre-eclampsia and eclampsia even in developed countries.[21]In Pakistan accurate and up to date estimate of maternal mortality is not available. The World Health Organization (WHO) estimates that in 2005, there were 536 000 maternal deaths-equivalent to one every minute of everyday-and that the global maternal mortality rate is now 400/100 000 live births.[22] which is very high if compared with 1 in 10000 pregnancies in United Kingdom.[23] The main causes of the death are toxaemia, anaemia, haemorrhage and puerperal sepsis. During the study time period severe pre-eclampsia contributes to three maternal deaths with case fatality rate of 4%. Renal failure, pulmonary embolism and cerebrovascular accident were the identifiable causes of maternal mortality. No maternal death due to pre-eclampsia was reported by DJ Murphy at UK[17] as well as in Multan.[2] This is because of the fact that in these countries women are in good health prior to pregnancy, good antenatal care, further, improves that condition and quick and proper intervention was carried out before their condition deteriorated.

Hypertensive disease is an important cause for delivery of very low birth weight babies and delivery at early gestation is associated with high perinatal mortality and morbidity resulting from prematurity. It is the commonest cause of iatrogenic prematurity accounting for 15% of all premature birth and approximately one in five very low birth weight infants (<1500g).[3] In our study live fetal outcome was 51(61.4%) while it was 98.5% in DR HALL study.[15] The perinatal loss was 32(38.6%) while it was observed in 28% of cases at UK[17] that may be because of better neonatal facilities in developed countries. Out of 32 perinatal deaths 14(16.8%) were intrauterine deaths. It was matched with the study in St Michael's Hospital[17] and 18(21.6%)were neonatal deaths which is higher than the DJ Murphy's study in which it was about 12%.[17]

Pre-eclampsia accounts for 5-20% of all preterm births.[17] In our study 45 (54.2%) babies were born preterm. It was higher than the study of Robyn A (35%).[12]

Regarding neonatal morbidities that leads to neonatal mortality, are low apgar score (<6 in 5 minutes) attributed to severe uteroplacental insufficiency was seen 44.4% of babies in our study while it varies between 5.6-14.2% in different studies.[11,15] The severity of uteroplacental insufficiency affecting the fetus in severe maternal pre-eclampsia was reflected in rate of intra-uterine growth retardation 4 (22.2%) in our study while it was lower than the study carried in Australia that was 43%.[24] Birth asphyxia seen in 4 (22.2%) of cases. It was seen low because of timely delivery of the compromised fetus could have prevented the development of severe birth asphyxia. In our study 1 (5.6%) neonate expired due to respiratory distress and 1(5.6%) baby due to neonatal sepsis.

Fortunately, especially in western countries , there have been falling trends in the cause of late fetal deaths in the last decade in relation to pre-eclampsia from 35/10,000 total births (1982-1990) to 2.1/10,000 total births (1991-2000) but it is still a significant cause of perinatal mortality.[25]

CONCLUSION

No one can deny the negative impact of hypertension on pregnancy and child birth. In Pakistan, there is a tremendous need for expansion of maternal and child health services in urban and more importantly in rural areas. Good antenatal care will identify pre-eclampsia in early stages. Adequate assessment, investigations, monitoring , intensive care and effective management of these patients in the antepartum, intrapartum and postpartum periods will decrease the morbid complications and risk of maternal and neonatal mortality.

In this way, a healthy mother can give birth to a healthy child, capable of developing normally into a healthy adult without herself suffering from any consequences.

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