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Feto-Maternal Outcome In Case of Pre-Eclampsia and Eclampsia

[1]Dr. Prarthana Jhaveri, 3rd Year Resident, Dept. of Obgyn, SBKSMI & RC, Vadodara

[2]Dr. Radhika Parmar, Assistant Professor, Dept. of Obgyn, SBKSMI & RC, Vadodara

Corresponding Author: Dr. Radhika Parmar, Assistant Professor, Dept. of Obgyn, SBKSMI & RC, Vadodara

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Abstract

Background: Hypertensive disorders of pregnancy are a leading cause of maternal and perinatal mortality and morbidity worldwide. In India, it is third most important cause of maternal mortality. The objectives are to evaluate maternal and perinatal outcome and complications in cases with severe preeclampsia and eclampsia.

Methods: A retrospective study was carried out on 100 women with pre-eclampsia, severe pre-eclampsia and eclampsia in a tertiary care referral centre over a period of 10 months. Cases with initial B.P reading of ≥160/110 mm Hg or presenting with eclampsia were added in this study. Investigations and management were done as per departmental protocol and maternal and fetal outcomes were recorded.

Results: 42% of the cases were in the age group of 26-30 years, nearly 60% were primigravidae and the majority (60) were referred from peripheral hospitals. Liver function tests were abnormal in 19% of the patients and 15% had abnormal renal function. Nifedipine was the most commonly used antihypertensive and magnesium sulphate was the anticonvulsant used in most of the cases. Lower segment caesarean section was the mode of delivery in 65% of the cases and commonest maternal complication was atonic PPH. There was no maternal mortality but there were 2 maternal near-miss cases due to DIC. 60% of the cases had a preterm delivery and 40% of the babies needed NICU admission. There were 12 neonatal deaths.

Conclusions: Accessible health care, health education and awareness regarding antenatal check-ups for all women will lead to early detection of severe preeclampsia and eclampsia. Prompt treatment and management of its complications will improve the maternal and fetal outcome.

Keywords: Eclampsia, Maternal morbidity, Maternal mortality, Perinatal morbidity, Perinatal mortality, Preeclampsia

Introduction

Hypertensive disorders complicate about 10 % of all pregnancies worldwide.1 The World Health Organisation systematically reviews maternal mortality worldwide and in developed countries 16% of maternal deaths were reported to be due to hypertensive disorders.2 In India

hypertensive disorders account for the third most important cause of maternal mortality.3

For classifying and defining hypertensive disorders of pregnancy, The National High Blood Pressure Education Program (NHBPEP) and ACOG (2013 b) evidence based recommendations have been taken into consideration.4

Preeclampsia is a multisystem, multifactorial disease defined as Blood Pressure (B.P) reading of ≥140/90 mm Hg on two occasions 4 hours apart and >0.3 g protein in 24 hour urine specimen after 20 weeks of gestation in a previously normotensive woman.

Severe Preeclampsia is B.P reading of ≥160/110 mm Hg and >5 g protein in 24 hour urine specimen or symptoms of end organ damage like deranged LFT, thrombocytopenia, oliguria, visual disturbances, pulmonary oedema etc.

Eclampsia is defined as generalised tonic clonic seizures and /or unexplained coma in a woman with preeclampsia.

In spite of advances in medicine, preeclampsia and eclampsia continue to remain leading causes of maternal and perinatal mortality and morbidity throughout the world.

Severe Preeclampsia can lead to multiple life-threatening complications like eclampsia, cerebral haemorrhage, cardiovascular complications, hepatic failure, acute renal failure, pulmonary oedema, ARDS (Adult Respiratory Distress syndrome), DIC (Disseminated Intravascular Coagulation) HELLP syndrome (Haemolysis, Elevated Liver enzymes, Low Platelet), retinal detachment, cortical blindness, hypoxic cerebral damage and even maternal death.

Fetal complications are mainly due to uteroplacental insufficiency leading to IUGR (Intrauterine Growth Restriction), low birth weight babies, IUFD (Intrauterine Fetal death) and complications due to prematurity.

The risk factors are nulliparity, previous history of preeclampsia, maternal age over 40, multiple gestation, molar pregnancy, pregestational diabetes, vascular, endothelial or renal diseases, maternal smoking, obesity and certain genetic factors.5

Various biological, biochemical and biophysical markers implicated in preeclampsia syndrome have been studied as markers to predict the development of preeclampsia. Uterine artery doppler velocimetry in the late first and second trimesters showing increased resistance may be a predictive test for the development of preeclampsia.5,6 Currently no other test is reliable, valid or economical and most have met with poor sensitivity and poor positive predictive value.

Maternal and perinatal mortality and morbidity due to preeclampsia can only be prevented by access to quality antenatal care, early diagnosis and recognition of risk factors, careful monitoring and timely interventions.

The present study was undertaken in a tertiary care referral hospital in Vadodara with the aim of evaluating the maternal and perinatal outcome and complications of severe preeclampsia and eclampsia.

Materials and Methods

This research is a 10 month retrospective study of severe preeclampsia and eclampsia cases in SBKS Medical College & Hospital from Sep 2019 to June 2020. A total of 100 women with preeclampsia, severe preeclampsia and eclampsia were included in the study and their cases were retrospectively analyzied.

Inclusion criteria

B.P reading of ≥140/90 mmHg with 1+ or more albuminuria was the criteria followed for categorising preeclampsia.

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B.P reading of ≥160/110 mmHg with 1+ or more albuminuria was the criteria followed for categorising severe preeclampsia.

Eclampsia is presence of seizures with preeclampsia which could not be attributed to other causes.

Exclusion criteria

Patients with chronic hypertension (before 20 weeks of gestation), chronic renal disease, connective tissue disorders.

The information on maternal age, parity, booking status, gestational age at diagnosis mode of delivery, treatment given complications (maternal and fetal) and the maternal and fetal outcome.

Investigations and management were carried according to the departmental protocol. Investigations done were complete haemogram, platelet count, liver function tests, renal function tests, coagulation profile, 24 hour urine protein. Ultrasonography with Doppler was done after stabilising the condition of the patients in selected cases.

Antihypertensive drugs used were alphamethyldopa, nifedipine and labetalol (orally and parenterally). MgSO4 was the anticonvulsant of choice used both as prophylaxis and treatment according to the Pritchard's regime.

Results

Out of the 100 patients in the present study, preeclampsia was observed in different age groups ranging from 18 to 40, maximum number of cases 46 were in the age group of 25 to 30 years. There were 8 patients over the age of 35. Table I gives the distribution cases vis a vis age of patients.

Table 1: Distribution according to the age of the patients.

Age	No. of cases	%
< 20	19	16.30
21-35	26	24.56
26-30	46	42.10
31-35	11	9.00
> 35	9	7.20

Table 2: Distribution according to their obstetric status.

Gravidity	No. of cases	%
Primigravida	68	60.99
Multigravida	32	39.87

Table 3: Distribution according to their antenatal registration status.

Registration status	No. of cases	%
Booked	80	78.40
Unbooked	10	21.80

This study was carried out in Vadodara, where antenatal coverage is very good and so only 21.80% of our patients were unbooked. Out of the total 100 cases, 60 were referred from peripheral hospitals.

Table 4: Distribution of according to the investigations done.

Proteinuria	≤+1	≥+2	≥+3	
Cases	16	21	74	
%	12.67	29.18	59.18	
LFT	SGOT >70 IU/L	SGPT >70 IU/L	LDH >600	Serum bilirubin >1.2 mg/dl
Cases	25	11	9	17
%	19.10	18.09	10.63	15.54
RFT	Blood urea >40	Serum creatinine >0.8	Serum uric acid >7	
Cases	19	11	27	
%	13.65	15.90	19.45	
Coagulation	Platelet	Derang	Peripheral	

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profile	count <1 lakh	ed PT INR	smear with haemolysis
Cases	20	14	6
%	16.50	16.39	7.17

59% of the patients had ≥+3 proteinuria, 19% had abnormal renal function tests, abnormal liver profile in 17% and evidence of haemolysis on peripheral smear in 7% cases.

Table 5: Gestational age.

Gestational age	No. of cases	%
≤ 28 weeks	16	10.81
29-32 weeks	19	12.63
33-36 weeks	40	45.0
≥37 weeks	39	35.54

It was observed that the majority 40 (45%) of the patients presented at gestational age between 33 to 36 weeks. Extreme preterm presentation before 28 weeks of gestation was noted in 19 (12.63%).

Table 6: Antihypertensives drugs used in the treatment.

Drug used	No. of cases	%
Nifedipine	40	38.10
Labetalol	36	20.18
Nifedipine+Alphamethyldopa	10	9.18
Nifedipine+Labetalol	29	20.54

Nifedipine was the most commonly used drug in the present study. Alpha-methyldopa was used when patients presented with severe preeclampsia before 28 weeks of gestation, but in all the cases it was used in combination with nifedipine. Labetalol was used singly as well as in combination with nifedipine.

Table 7: Mode of delivery in our study

Mode of delivery	No. of cases	%
Normal vaginal delivery	41	28.90
LSCS	81	64.64
Instrumental	6	4.50
Hysterotomy	3	3.74

Table 8: Indication for caesarean section.

Indication	No. of cases	%
Previous caesarean section	42	30.36
Non-reassuring fetal status	15	16.90
Failed induction	10	14.64
CPD, contracted pelvis	5	5.46
Doppler abnormalities, IUGR, oligohydramnios	15	10.80
Abruption	5	3.65

Previous caesarean section was the commonest indication for caesarean section because patients presenting with severe preeclampsia or eclampsia were not given trial of normal labour and caesarean was done after stabilising the patient. In some cases, there was an overlap of Indications like doppler abnormalities with failed induction and abruption with non-reassuring fetal status.

Atonic PPH was the commonest complication in 20 patients and which was managed with oxytocin and prostaglandin F2 alpha. Bilateral uterine and ovarian artery ligation was needed in 10 cases.

Table 9: Maternal complications and outcome of pregnancy

Complication	No. of cases	%
Eclampsia	17	12.81
Abruptio placentae	6	8.27
Partial HELLP	30	20.09
HELLP	6	5.54

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PPH	36	25.63
DIC	2	2.82
Pulmonary edema	2	0.80
Renal dysfunction	9	6.37
ARDS	0	0

There were 17 cases of eclampsia in the study- 9 antepartum and 4 postpartum. All the 13 cases were treated with magnesium sulphate. Out of the 100 patients, 64 received prophylactic magnesium sulphate. Partial HELLP syndrome was noted in 30 patients. Near- miss cases were there in 2 cases with DIC and 6 cases of HELLP. These near-miss cases were managed by a multidisciplinary team. There was no maternal mortality.

Table 10: Perinatal complications and outcome.

Complication	No. of cases	%
IUGR	21	20.81
Prematurity	70	65.54
Respiratory distress syndrome	15	26.72
Meconium aspiration	6	5.64
Intrauterine death	5	7.36
Still birth	7	8.72
NICU admission	47	49.09
Low birth weight babies	35	53.63
Neonatal death	18	10.09

The number of cases of preterm delivery were high at 60% due to the premature induction of labour in cases of severe preeclampsia and eclampsia. NICU admission was needed for 47 babies, 15 had respiratory distress syndrome and there were 18 neonatal deaths.

Discussion

Out of the 100 cases of severe preeclampsia and eclampsia in the present study, 68 were primigravidae and 19 were less than 20 years of age. The highest number of cases was in the age group of 26-30 years. Severe preeclampsia was detected more commonly in primigravidae. Other studies notably by Sibai and Cunningham also support this theory.7 Nulliparity as a separate risk factor for severe preeclampsia has been reported in studies by Saxena et al and by Conde-Agudelo.8,9

About 80% of the cases presented at gestational age >33 weeks. Singhal et al also reported similar thing.10 In the present study, 78% were booked cases, but 50% of cases were referred from peripheral hospitals. The incidence of severe preeclampsia and eclampsia are higher among unbooked patients. In a study from rural Gujarat by Gandhi et al 76.6% of total cases of preeclampsia were unbooked patients.11

The most common mode of delivery was lower segment caesarean section in 64% of the cases and the most common indication was previous one or more caesarean sections. The mode of delivery depends on severity of maternal condition, Bishop's score, gestational age, fetal condition, USG and laboratory investigations. Singhal et al reported 30% caesarean section rate. 10 Tufnell et al reported 70% caesarean section rate in BJOG.12 Caesarean section rates of 70% and 77% respectively were reported by Miguel M et al and Dissanayake VH et al.13,14. In the present study, the high rate of caesarean section is due to more than 30 % cases being previous caesarean section and also due to emergency delivery approach taken to prevent further maternal and fetal complications due to severe preeclampsia or eclampsia especially in cases where the cervix is unfavourable for induction.

10% of cases had LSCS for reversed or absent end diastolic flow in umbilical artery. Uteroplacental insufficiency seen in severe preeclampsia and eclampsia is the major cause of IUGR seen in 20% of the cases in the this study. Prematurity was the most common

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complication among the neonates seen in 65% of the cases. Tufnell et al reported 60.3% incidence of prematurity.11 The high incidence of preterm delivery could be at due to the early intervention and induction of labour or LSCS done to prevent further maternal and perinatal complications.

Main factors affecting perinatal mortality and morbidity were prematurity, IUGR and irregular antenatal visits. Being a tertiary care centre we have an efficient team of neonatologists and neonatal intensive care unit (NICU) back up. The perinatal mortality rate in our study was 10 % i.e. 18 in number of which 5 were intrauterine fetal deaths 7 stillbirths and 6 neonatal deaths all due to prematurity and respiratory distress syndrome. A perinatal mortality rate of 27.7% was reported from south-east Nigeria and Shahin et al from Pakistan reported perinatal mortality of 48.6%.15,16

The main factors determining maternal morbidity are associated risk factors like diabetes, anaemia, advanced maternal age, early onset preeclampsia, severe preeclampsia and previous history of preeclampsia. In this study, postpartum haemorrhage was the most common maternal complication seen in 25.6% of cases followed by partial HELLP in 20% cases and eclampsia in 12.81% cases. Various studies have reported abruptio placenta and HELLP syndrome as more common complications. A study by Farid M et al had 15% incidence of HELLP syndrome and 18% incidence of abruptio placenta.17 In a 10 year study done byIgberase et al the important causes of maternal mortality in severe preeclampsia were acute renal failure, disseminated intravascular coagulopathy (DIC), cardiac arrest, pulmonary edema and cerebrovascular accidents.18 In the present study, there was no maternal mortality, however there were 2 maternal near-miss cases due to DIC and 6 cases of HELLP syndrome. These were managed in the ICU of the hospital by a multidisciplinary team.

Conclusion

Preeclampsia and eclampsia continue to be significant causes of maternal and fetal morbidity and mortality. Though prevention is not possible, it is important to recognise early warning symptoms and signs so that life threatening complications can be averted. Provision of quality antenatal health care services, increasing patient awareness about warning symptoms, investigations, timely delivery and intensive monitoring in the intrapartum and postpartum period have the potential to improve maternal and perinatal outcome. Education and empowerment of women and accessible health care especially to the socioeconomically deprived and rural population is the need of the hour.

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