

DOI: 10.5455/2320-1770.ijrcog20141222

Research Article

Expectant management of severe preeclampsia in mid-trimester: a hospital based study

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Received: 17 September 2014

Revised: 6 October 2014

Accepted: 19 October 2014

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ABSTRACT

Background: Objective of current study was to determine the maternal and perinatal outcome of the expectant management of severe preeclampsia between 24 weeks and 34 weeks of gestation.

Methods: Data was collected from the 50 case notes of the mothers who had expectant management of severe preeclampsia. The study period was April 2011-March 2013. Total of 27 women in the year 2011-2012 (April-March) and 23 women in the year 2012-2013 (April-March) were included. Maternal condition was carefully monitored with the help of non-invasive monitors. Fetal condition was monitored by ultrasound and colour Doppler. Number of days as pregnancy prolongation and maternal and perinatal morbidities were calculated and analysed.

Results: The number of days prolonged has been maximum in gestational age of 28-30 weeks, median being 23.5. There is association between higher maternal DBP and appearance of maternal complications (as DBP increases mother is more at risk).

Conclusions: Pregnancies complicated by severe preeclampsia can be managed expectantly in a tertiary care centre of India (low resource country) provided mother and fetus are monitored for their wellbeing.

Keywords: Early onset severe pre-eclampsia, Maternal monitoring, Fetal monitoring, Expectant management, Maternal morbidities, Perinatal outcome, Magnesium sulphate

INTRODUCTION

Preeclampsia is a serious pregnancy disorder which exists worldwide and associated with serious maternal morbidities and mortalities. Preeclampsia and eclampsia still accounts for a great proportion of maternal death worldwide. Maternal morbidities and mortalities are more in low resource setting (in developing world).

The incidence of preeclampsia is 7.9% and severe PET is 3.9%. Approximately 10-20% of pre-eclamptic mothers die. The perinatal mortality rate also increases proportionately as per the severity of preeclampsia and gestational age of the mother.¹

Early onset severe preeclampsia has a far worse course than late onset severe preeclampsia not only in terms of maternal outcome but also fetal outcome. There is general consensus that women who have developed severe preeclampsia should be delivered as soon as fetal maturity is good enough which is generally at or after 34 weeks of gestation, as delivery of baby and placenta still remains the treatment.

In patients with early onset severe preeclampsia, many a times it becomes imperative to deliver the fetus at a very preterm gestation or may be before that. This is due to the fact that maternal condition deteriorates and can lead to grave consequences for the mother i.e. stroke, blindness and death. But this leads to very poor perinatal outcome.

But early delivery has high neonatal mortality and morbidity resulting from prematurity. There is usually prolonged hospitalization of the neonate in these cases and long term disability. But, on contrary sometimes expectant management may also lead to fetal death or fetal asphyxia.²

It is due to this very reason proposals were made by many obstetricians to manage these patients conservatively as long as it is safe for mother. If there is any alarming sign of maternal deterioration then delivery should be done.

On literature search there have been trials like this in western countries with pregnancy prolongation. The management protocols have been based on expert opinions. There have been successes in prolonging the pregnancy for couple of days. Randomised controlled trial performed in 1994 showed improvement in perinatal outcome with no adverse effect on maternal outcome.³

In the review performed by Sibai & Barton, they found 1559 patients with severe preeclampsia >25 weeks were managed conservatively. The perinatal mortality rate was 0-16.6% and death rate for >30 weeks gestation was 0%.⁴

Maternal administration of corticosteroids (Betamethasone) was found to be useful in these patients as regards the acceleration of lung maturity.⁵

Expectant management of pregnant mothers with early onset severe preeclampsia may act as double edged sword for both mother and fetus. There have been few studies in the literature which has shown that.^{6,7}

Our aim was to determine the maternal and perinatal outcome in early onset severely pre-eclamptic mothers on expectant management for severe preeclampsia between 24 weeks and 34 weeks. Study was taken in the University teaching hospital of North India which has intensive care facilities for both mother and baby.

METHODS

The study period was April 2011-March 2013. Observational data was collected of patients with severe preeclampsia who were planned to have expectant management in Sir Sunderlal hospital a tertiary referral centre, institute of medical sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, North India.

The number of registered pregnant mothers during study period was 3868 out of which 50 women of gestational age 24-34 weeks with severe preeclampsia were taken in study. Informed consent was taken from the women and patients relatives were also informed about the condition, maternal and fetal prognosis. All participating mothers were extensively counselled regarding the maternal and perinatal risks of expectant management.

Diagnosis of preeclampsia and severity was established based on the clinical findings, investigations. Royal college of obstetrician and gynaecologist, London guideline was used to categorise women for severity of preeclampsia. Initially women were observed for 24 hours with appropriate medication. If they did not show any contraindication then only they were selected for study.

Steroid (Betamethasone 12 mg IM) was administered to the patients in two doses twelve hours apart. These mothers had BP >160/110 mm Hg on two occasion at least 6 hours apart, >0.5 grams of proteinuria in 24 hours and elevated uric acid >5 mg/dl.

The pregnant mothers who were studied were monitored on the labour and delivery unit with non-invasive monitors. Fetus was monitored by fetal heart rate monitoring and ultrasound Doppler for evidences of IUGR. All PET bloods (full blood count, renal function test, liver function test, coagulation profile, platelet count, urine test for albumin, 24 hours urinary protein assessment) were sent to the lab for evaluation. Patients were asked to maintain a chart for DFMC (daily fetal movement count).

Maternal condition was carefully monitored with the help of non-invasive monitors. Fetal condition was monitored by ultrasound for gestational age and liquor. Colour Doppler was performed to see for vascular changes. Labetalol and nifedipine were used to control hypertension. Multidisciplinary team was involved (cardiologists opinion was taken in cases of severe hypertension which was difficult to control and nitroglycerine drip was started). MgSO₄ was used according to the Pritchard regime in cases that developed eclampsia. MgSO₄ was used according to the guideline.

Dosage of labetalol was 200 mg every 8 hourly up to a maximum of 2.4 grams (600 mg 6 hourly). Nifedipine was used at a dosage of 10 mg every 6 hourly with a maximum of 120 mg (20 mg every 4 hourly) per day.

Number of days pregnancy prolongation and maternal and perinatal morbidities were calculated and analysed.

Pregnant mothers were excluded if they had

1. Eclampsia
2. Severe uncontrolled hypertension (difficulty to stabilize systolic blood pressure <160 mmHg and diastolic blood pressure <100 mmHg despite adequate anti-hypertensive treatment)
3. Abruptio placenta
4. Non-reassuring CTG, reverse end diastolic flow in the umbilical artery, severe oligohydramnios

5. HELLP syndrome
6. Abnormal fetal heart rate
7. Severe IUGR/reverse end diastolic velocity
8. History of medical illness i.e. diabetes, epilepsy, cardiac disease, renal disease
9. Obstetric history of recurrent abortions, twin pregnancy, placenta previa

Maternal conditions were monitored round the clock i.e. blood pressure, urine albumin, 24 hours protein excretion, uric acid, liver function test and clinical profile charting was done. Above mentioned blood test were performed on a biweekly basis.

Timing of delivery was planned/decided if mother was fortunate enough to reach 34 week or else if there were any complications in mother (eclampsia or HELLP syndrome) or unstable blood pressure (unstable BP with maximum dosage of labetalol and nifedepine), new onset of headache or visual symptoms, abruption placentae, preterm labor. Doppler velocimetry studies were done on weekly basis on all expectant management groups pregnant mothers but if Doppler shows REDV/AEDV is was done on biweekly basis, although this was very much depended on the resources availability. If fetus showed compromised growth with Doppler vascular changes and severe oligohydramnios then decision about delivering the baby was taken. This study took in a tertiary centre of North India and so we kept the viability at 26-28 weeks weighing approximately 1 kg. Deliveries were done even with earlier gestational age if mothers' condition demanded that, in which mothers' health was given a priority.

We wanted to know the maternal and fetal outcome in this study. Main maternal complications studied were

maternal death, eclampsia, HELLP syndrome, pulmonary edema, abruption, DIC and loss of vision. Main fetal and perinatal complications were IUGR, IUD, stillbirth, neonatal death, poor APGAR, NICU admission. Outcomes were calculated according to the gestational age which was divided in groups.

Statistical analysis was done in the statistical department of Institute of medical sciences using student t test and Chi square test. A P value of <0.05 was considered to be significant.

RESULTS

The number of registered pregnant mothers during April 2011-March 2013 was 3868 out of which number of women with any form of preeclampsia (mild, moderate and severe) was 348 (9% of total registration). Severe pre-eclamptic women admitted at 24-34 weeks were 193 (5% of total registration). 143 (3.69% of total registration) women were not eligible for expectant management as they had contraindications. 50 pregnant (1.30% of total deliveries) women were included in the study and they had expectant management of severe preeclampsia. The pregnant mothers were between 24-34 weeks of gestation. The age and parity of the study subjects are given in the Table 1(a) and 1(b). Table 1(a) confirms the increased occurrence of preeclampsia in primigravida. In the pregnancies with preeclampsia the main objective of clinician is to prolong the gestational age as much as possible to save the fetus as well as safeguard the mother from developing any complications. During the study this phenomenon was of great attention. Table 1(b) revealed that most of the women taken in the study under defined inclusion and exclusion criterion were of gestational age 28-30 weeks. The results regarding number of days prolonged have been presented in Table 2.

Table 1(a): Distribution of age and parity among mothers with severe preeclampsia.

	Type of parity		Total	P value
	Primigravida	Mutligravida		
No. (%)	40 (80)	10 (20)	50 (100)	
Age (Mean ± SD)	24.40 ± 3.04	26.50 ± 2.01	24.82 ± 2.97	0.04

Table 1(b): Distribution of severely pre-eclamptic mothers according to gestational age.

Gestational age in weeks	Number (percentage)
24-28	13 (26%)
28-30	22 (44%)
30-32	12 (24%)
32-34	3 (6%)

Table 2 showed the management of prolonging the days of deliveries was much effective in gestational age 28-30 weeks with mean 7.36 days ranging from 3 to 18 days followed by gestational age 32-34 weeks ranging from 5 to 9 days.

The number of days prolonged has been tabulated in Table 2. The maximum number is in gestational age of 28-30 weeks, range being 3-18.

Table 2: Distribution of days (Gestational age) prolonged in severely pre-eclamptic mothers according to their Gestational age.

Gestational age in weeks	Days prolonged (Mean ± SD)	Range in days	Median (Interquartile Range)
24-28 weeks	6.46 ± 4.26	3-15	4.0 (6)
28-30 weeks	7.36 ± 4.15	3-18	6.5 (5)
30-32 weeks	5.50 ± 1.98	3-8	6.0 (4)
32-34 weeks	7.00 ± 2.00	5-9	7.0 (0)

The maternal outcomes are summarised in Table 3. Fortunately there weren't any maternal death, cerebrovascular accident or acute renal failure. DIC was managed in collaboration with haematologist and it resolved. Pregnant mother with pulmonary edema was managed conservatively, high flow oxygen and a single dosage of diuretic. HELLP was managed as per severe preeclampsia guideline. Loss of vision was managed conservatively as the ophthalmological examination showed retinal edema and patient was explained that it is self-limiting and will resolve. Eclampsia did not result in any long term complication.

Table 3: Frequency of maternal complications.

Complications	Frequency	Percentage
Abruption	2	4%
HELLP	2	4%
Pulmonary edema	2	4%
Loss of vision	1	2%
Fits/Eclampsia	4	8%
DIC	1	2%
IUGR	1	2%

Table 4 shows the incidence of IUD, stillbirth and neonatal death. In this study the lowest perinatal complication was in 32-34 weeks of gestation as well as 28-30 weeks of gestation.

Table 4: Perinatal complications as per gestational age.

Gestational age in weeks	IUD	Stillbirth	Neonatal death
24-28	2	0	2
28-30	0	0	1
30-32	0	2	2
32-34	0	0	1

Table 5 shows maternal complications as gestational age was prolonged. P value under chi-square test of association is >0.05, which reveals no significant association between number of days prolonged and complications. Thus increasing number of days did not result in increasing complication. It also can be concluded that maternal complication didn't increase due to pregnancy prolongation.

Table 5: Maternal complications as gestational age was prolonged.

Number of days prolonged	Complications, Number (%)		Total (%)
	Nil	Present	
≤5	15 (65)	8 (34)	23 (100)
>5	22 (81)	5 (18.5)	27 (100)
Total	37 (74)	13 (26)	50 (100)
P value >0.05 for Chi-square test of association			

Table 6 shows Statistical correlation between high DBP (even higher BP) and maternal complication. P value under Chi square test of association is found to be <0.05 so, there is association between higher maternal DBP and appearance of maternal complications (as DBP increases mother is more at risk). This justifies our assumption that if we try to prolong the gestational age in cases of severely pre-eclamptic mothers higher level of diastolic blood pressure will have worse outcome.

Table 6: Statistical correlation between high DBP (even higher BP) and maternal complication.

Range of DBP	Complications, Number (%)		Total (%)
	Nil	Present	
100-120 mm Hg	28 (82.4)	6 (17.6)	34 (100)
120-140 mm Hg	9 (56.2)	7 (43.8)	15 (100)
Total	37 (74)	13 (26)	50 (100)
P value > 0.05 for Chi-square test of association			

Table 7: Indications for delivery.

	Number	Percentage
Maternal		
Uncontrolled hypertension	15	30
Abruption	2	4
Persistent headache/pulmonary edema	2	4
Blurred vision/loss of vision	1	2
Epigastric pain	3	6
HELLP/DIC	3	6
Eclampsia	4	8
Fetal		
Severe IUGR	1	2
REDV	5	10
Preterm labor/PPROM	5	10
Severe oligohydramnios	9	18

DISCUSSION

Early onset severe preeclampsia is becoming more common now a day due to advanced maternal age at first pregnancy, coexisting medical disorder e.g. chronic hypertension and multifetal gestation due to artificial reproductive techniques. Most of obstetrics and

gynaecology consultant may not have adequate experience in treating these patients, as most of the patients are referred to tertiary referral centre.

Earlier it was thought that cases of IUGR and preeclampsia hasten the fetal lung and overall maturity. But this has been refuted lately.⁸ We certainly have evidence and grade A recommendation to administer betamethasone to the women for accelerated maturity of fetal lung. Perinatal mortality and prognosis of fetus is proportional to the gestational age, more advanced the gestation better the outcome.⁹ Based on the above it seems prudent to prolong pregnancy by expectant management in these women along with steroid injection provided maternal safety is not compromised. That why we planned to do this observational study. The number of days prolonged are in agreement with other studies done. The maternal complications were in agreement with other studies.¹⁰⁻¹² The neonatal morbidities were in accordance with other studies although the sample size is too small. We need a much larger sample size before we can draw conclusion with certainty.¹³

CONCLUSION

Pregnancies complicated by severe preeclampsia can be managed expectantly in a tertiary care centre of India (low resource country) provided mother and fetus are monitored for their wellbeing and multidisciplinary care is involved. This should only be done in a set-up which provides intensive care facility for both mother and fetus. Adequate counselling regarding continuation of pregnancy should be done if severe preeclampsia starts before 30 weeks as it is associated with poor prognosis for both mother and fetus. Expectant management with frequent monitoring of maternal and fetal condition is rewarding in a carefully select group of pre-eclamptic pregnant mothers. But, this should be practised only at a tertiary referral centre.

ACKNOWLEDGEMENTS

The statistical help of Dr. G P Singh, Department of Community Medicine, Institute of Medical Sciences, Banaras Hindu University, Varanasi is gratefully acknowledged.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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DOI: 10.5455/2320-1770.ijrcog20141222

Cite this article as: Pandey U, Thapa S, Singh J, Sharan J. Expectant management of severe pre-eclampsia in mid-trimester: a hospital based study. *Int J Reprod Contracept Obstet Gynecol* 2014;3:990-4.