Bangladesh J Obstet Gynaecol, 2017; Vol. 32(2): 73-78

# Expectant Management of Severe Pre-eclampsia remote from term: Maternal and Perinatal outcome

KAMRUN NAHAR [1], HOSNA AKTER[2], SUMMYIA NAZMEEN[3], SARIA TASNIM[4]

**Abstract**

***Background:*** *Management of severe pre eclampsia remote from term remains one of the most difficult challenges in obstetric practice. Expectant management of early onset severe pre eclampsia improves neonatal outcome.*

***Methods:*** *A prospective case series extending over five years peiod were recorded to evaluate the maternal and perinatal outcome of expectant management of severe preeclampsia presenting between 24-34 weeks of gestation in a tertiary referral center. All women (n=160) presenting with early onset (24-34 weeks of gestation) severe pre-eclampsia , where both the mother and the fetus were otherwise stable. Frequent clinical and biochemical monitoring of maternal status with careful blood pressure control. Foetal surveillance included six hourly foetal heart rate monitoring, bi weekly non stress test and weekly USG evaluation.*

***Results:*** *Mean number of days of prolongation of gestation was 6 days ( range 1-24days). The largest prolongation of pregnancy was recorded in patients with the lowest gestational age. Conservative management was associated with a 1.63% ( 17/160) intrauterine fetal loss rate. The days of pregnancy prolongation and perinatal mortality were significantly higher among those managed at <30 weeks. Increasing gestational age correlated with a reduction of RDS ( respiratory distress syndrome). Maternal morbidities were significantly higher among those managed at < 32 weeks. But there was no maternal mortality.*

***Conclusion:*** *Good perinatal outcome and less risk to mother can be achieved at 30-34 weeks gestation.*

***Key words:*** *severe pre eclampsia, maternal outcome, perinatal outcome*

## Introduction:

Pre eclampsia is a pregnancy specific multisystem disorder of unknown etiology. The disorder affects approximately 10% of pregnancies[1] . while overall rates of pre eclampsia remain static , rates of severe pre eclampsia appear to have increased over recent decades[2]. Recent reports from world health organization estimate that pre eclampsia is directly responsible for 70000 maternal deaths annually worldwide[3] .It is associated with a five fold increased risk of perinatal mortality with iatrogenic prematurity is the main culprit[4].

Management of severe pre eclampsia remote from term remains one of the most difficult challenges in obstetric practice. The course of early onset severe pre eclampsia is associated with a progressive deterioration of maternal condition. Delivery is the only way of arresting the disease. There is a broad agreement to terminate the pregnancy when maternal and fetal conditions are altered or once a gestation is reached to 34weeks. Delivery at early gestation is associated with high perinatal mortality and morbidity resulting from prematurity [5] . In addition, recent research suggests that fetal lung maturity as well as

1. Assistant professor, Shahabuddin Medical College Hospital.
2. Specialist Ob-gyn. Buraimi Hospital. Sultanate of Oman.
3. Consultant . Centre for Women and Child Health.
4. Professor and Head of Department Dhaka Community Medical College and Hospital.

**Address of Correspondence:** Dr. Kamrun Nahar (FCPS Obst and Gynae), Assistant professor, Shahabuddin Medical College Hospital. Phone- 01817539509, Email- knmzdr@gmail.com

fetal neurological and physical development are not accelerated in pregnancies complicated by pre eclampsia[6.7]. Neonatal outcome remains closely dependent on the use of corticosteroid for fetal lung maturity enhancement [8]. Expectant management of early onset severe pre eclampsia improves neonatal outcome. Expectant management on the other hand , may worsen maternal outcome[9]. This study was planned to determine the maternal and perinatal outcome after expectant management of singleton pregnancies with severe pre eclampsia between 24 and 34 weeks of gestation at a tertiary care center. Ethical clearance was obtained from institutional ethical review committee.

**Materials and methods:**

This observational prospective study was conducted in Shahabuddin Medical College Hospital between April 2012 to March 2017. over a five year period 160 women with singleton pregnancies presenting with early onset ( 24-34 weeks of gestation) severe pre eclampsia , where both the mother and the fetus were otherwise stable were studied. Exclusion criteria were severe pre eclampsia at less than 24 weeks or beyond 34 weeks of gestation and twin pregnancy. Data were extracted for maternal age , gravidity, parity, gestational age at delivery , birth weight, admission to neonatal intensive care unit and maternal and neonatal complications.

The diagnosis of severe pre eclampsia and HELLP syndrome ( haemolysis, elevated liver enzyme and low platelet count) was made according to the definition of the American College of Obstetricians and Gynecologists[10] .The following perinatal outcome were recorded: fetal growth restriction, small for gestational age, severe respiratory distress syndrome, intra ventricular haemorrhage , perinatal death and admission in the neonatal intensive care unit.

Recruited women were admitted to a high care ward for intensive , non invasive monitoring of maternal and fetal status. Gestational age was determined by means of the last menstrual period, obstetric ultrasonography (USG) or both. Corticosteroid to enhance fetal lung maturity was immediately started , 12.5 mg intramuscular , two doses 12hours apart , and given weekly thereafter until 33weeks of gestation or delivery. Khandelwel et al[11] conducted a open trial comparing the effects of two betamethasone regimens: 12mg over 12 hour versus 24hours dosing intervals at 23-34 weeks pregnancy. According to British recommendation , antenatal steroid treatment may be repeated before 34weeks of gestation if the 1st dose was completed 7days prior[12] . Antihypertensive drugs were administered to keep systolic blood pressure at 130-150mm of Hg and diastolic blood pressure at 80-100mm of Hg. We used three oral antihypertensive agents in a stepwise approach ( methyldopa 500mg QID, then Nifedipine 10mg TID and then Lebetalol 100mg TID). Injection Hydralazine was reserved to control hypertensive peaks, along with oral antihypertensive agents. Magnesium sulfate (10gm , loading dose) was given to prevent convulsion on admission.

A full blood count, renal function tests, liver function tests , urine routine examination , bed side urine albumin and coagulation profile were obtained on admission. Fetal condition at entry was assessed by means of USG for estimation of fetal growth and amniotic fluid volume. Non-stress test was done. The study of umbilical artery Doppler wave form were done in IUGR cases ( defined as estimated fetal weight <10th percentile).

Maternal monitoring included blood pressure measurement every four hours and a clinical evaluation of symptoms twice daily and according to patients condition. Blood tests were performed biweekly. Urine albumin, 24hours urine volume and maternal weight were assessed everyday. Daily fetal movement count , biweekly non stress test and USG evaluation of fetal growth and amniotic fluid every 2nd week . Fetal viability was set at a gestation of 28 weeks or more with a minimum estimated mass ( by USG) of 1000gm. Failure to control blood pressure or development of major maternal or fetal complications was an indication for delivery. Women reaching a minimum gestation of 34weeks without complications delivered electively.

Fetal indications for delivery during expectant management were abnormal fetal heart rate monitoring (repeated late decelaration, prolonged decelaration >3minute, short term variability <5beat /min over 60 minute observation), severe IUGR, severe oligohydramnios ( amniotic fluid index <5cm). Maternal indications for delivery during expectant management were eclampsia, HELLP syndrome, abruptio placenta, DIC ( disseminated intravascular coagulation), pulmonary oedema, severe uncontrolled hypertension, persistant headache or visual disturbance, persistant epigastric pain or right upper quadrant tenderness.

Maternal outcome in terms abruptio placenta, HELLP syndrome, pulmonary oedema, eclampsia and DIC and perinatal outcome IUGR, APGAR at 5min , NICU admission were observed.

Data were presented as mean with range, standard deviation and percentages .

**Results:**

During the study period 8250 women delivered in the study hospital. While 594(7.2%) women with any form ( mild, severe, early or late onset) pre eclampsia were managed. About 253(3.06%) were admitted for severe pre eclampsia between 24 and 34 weeks of gestation. Among them 160 (1.93%) were given expectant management. The clinical characteristics of study population shows 58.75% were primi, history of previous pre eclampsia 9.38% cases. Among 160 women 30% were obese and 6.2% had pregnancy with diabetes mellitus (Table-I).

Mean gestational age at admission was 33 weeks (Table-II). Mean prolongation of pregnancy after stabilization was 6 days. Range 1-24 days. The days gained were higher among those who had expectant management between 28-30 weeks of gestation (Table-III).

There was no instances of maternal death, severe acute renal failure, CVA (cerebrovascular accident) or loss of vision among the 160 women. Eclampsia was reported in 2 cases without any residual neurological deficit. All the two HELLP syndrome were in ante partum period. The 3 cases of pulmonary oedema had spontaneous resolution (Table-IV).

Over all IUGR 4.87%. 129 (80.6%) babies were born alive, with 28(21.7%) of these infants having an

**Table-I**

*Distribution of study subjects according to clinical characteristics (n=160)*

| Total number of cases Recruited ( n=160) | No | Percentage |
|---|---|---|
| Age (years) | | |
| 16-24 | 44 | 27.5% |
| 25-34 | 96 | 60% |
| >35 | 20 | 12.5% |
| Gravidity | | |
| Primigravida | 94 | 58.75% |
| Multigravida | 66 | 41.25% |
| Previous pre eclampsia | 15 | 9.38% |
| Family history of pre eclampsia | 8 | 5% |
| Obesity | 48 | 30% |
| Pregnancy with diabetes mellitus | 10 | 6.2% |

**Table II**

*Distribution of study subjects according to gestational ages (n=160)*

| Gestational age(weeks) | NO | Percentage |
|---|---|---|
| 24-28 | 16 | 10% |
| 28.1-30 | 18 | 1.13% |
| 30.1- 32 | 24 | 15% |
| 32.1-34 | 102 | 63.75% |

Mean gestational age was 33 weeks

**Table-III**

*Distribution of study subjects days gained at each entry gestation (n=160)*

| Gestational age ( weeks) | Number (n=160) | Mean | SD | Range |
|---|---|---|---|---|
| 24 - 28 | 16 | 10 | 5.68 | 2-24 |
| 28.1- 30 | 18 | 12 | 6.82 | 2-23 |
| 30.1- 32 | 24 | 8 | 5.13 | 1-16 |
| 32.1- 34 | 102 | 5 | 3.17 | 1-14 |

**Table-IV**

*Maternal outcome complications according to gestational age at admission (n=160)*

| Gestational age (weeks) | Abruptio placenta n(%) | HELLP syndrome n(%) | Pulmonary oedema n(%) | Eclampsia n(%) | DIC n(%) | No. complication n(%) |
|---|---|---|---|---|---|---|
| 24-28n=16 | 4 | 1 | 0 | 0 | 0 | 11 |
| 28.1-30n=18 | 6 | 0 | 0 | 0 | 0 | 12 |
| 30.1-32n=24 | 8 | 1 | 1 | 1 | 1 | 12 |
| 32.1-34n=102 | 12 | 2 | 2 | 1 | 1 | 84 |
| Total (n=160) | 30(18.75%) | 4(2.5%) | 3(1.9%) | 2(1.25%) | 2(1.25% | 119 (74.4%) |

**Table-V**

*Perinatal morbidity according to gestational age at delivery (n=160)*

| Gestational age (weeks) | IUGRn(%) | Birth asphyxian(%) | NICU admissionn(%) |
|---|---|---|---|
| 24-28(n=10) | 2(16%) | 0 | 0 |
| 28.1-30(n=12) | 7(58.3%) | 4(33.3%) | 5(41.7%) |
| 30.1-32(n=20) | 11(55%) | 12(60%) | 14(70%) |
| 32.1-34(n=118) | 47(39.8%) | 12(10.16%) | 71(10.16%) |

**Table-VI**

*Indications of NICU admission(n=90)*

| Major complications | No | Percentage |
|---|---|---|
| Septicaemia | 26 | 28.9 |
| Small for Gestational Age (SGA) | 24 | 26.7 |
| Respiratory Distress syndrome (RDS) | 19 | 21.1 |
| Convulsion | 8 | 8.9 |
| pneumonia | 8 | 8.9 |
| Necrotizing enterocolitis | 4 | 4.4 |
| Intraventricular haemorrhage | 1 | 1.1 |

**Table VII**

*Perinatal mortality according to gestational age at delivery*

| Gestational age (weeks) | Abortion | IUD | Still birth | Perinatal mortalityn(%) |
|---|---|---|---|---|
| 24-28(n=10) | 10 | | | |
| 28.1-30 (n=12) | 0 | 2 | 4 | 10(83.3%) |
| 30.1-32 (n=20) | 0 | 3 | 4 | 6(30%) |
| 32.1-34 (n=118) | 0 | 2 | 6 | 9(7.6%) |

APGAR score <7 at 5min. The total NICU admission required among 150 live born infants were 90(60%) (Table-V). Major complications of newborn for which NICU admissions were indicated were septicaemia, SGA, RAS, convulsion, Pneumonia and others (Table-VI & VII).

**Discussion:**

International guidelines trials and observational studies on the management of pre eclampsia suggest that expectant management of selected cases of early onset severe pre eclampsia (< 34weeks gestation) can improve neonatal outcome [10.13-19]. The criteria for patient selection and the indication for delivery are closely defined[10.15-18]. In clinical practice the decision of prolongation may be very difficult and controversial.

This study was undertaken to determine pregnancy prolongation and perinatal and maternal outcome after expectant management of singleton pregnancy with severe pre eclampsia between 24 and 34 weeks gestation. In this study pregnancies were prolonged by a mean number of 6 days, with a significantly greater period gained at earliar gestation. The days of pregnancy prolongation observed in this study are in agreement with the results of recent trials [20.21] .

The rate of maternal complications is similar to those reported in a previous study[20.22]. No maternal deaths, CVD or acute renal failure were recorded. The rate of eclampsia is (1.12%) is similar to other study[20]. There was evidence that 58% reduction in the eclampsia can be achieved by $MgSO_4$ prophylaxis[23]. About 18.75% of the women had abruptio placenta . which is nearly similar to other studies [20.24.25]. Neonatal outcome is related to gestational age at which expectant management has started and this correlate to other previous studies[20.26.27] .

Our observed perinatal mortality rate is 15.62% a little higher than other studies [20.21] .The disparity is due to socioeconomic status of the patients and limitations of neonatal intensive care unit. 83.3% of the perinatal deaths were in <30weeks; more than half of which is caused by abruptio placenta.

NICU admission was needed in 60% of babies. The common complications for which NICU admission were respiratory distress syndrome, sepsis and small for gestational age. The result is nearly similar to other study [20.25.28].

The excellent perinatal out come obtained in women on expectant management at>30 weeks . Corticosteroid prophylaxis to be a major determinant factor in preventing adverse neonatal out come[29] .

**Conclusion:**

Expectant management of severe pre eclampsia remote from term is feasible in a routine clinical setting .In our study a mean of 6 days (range 1-24 days) were gained by expectant management. Perinatal mortality was 15.62% and no maternal mortality was observed. Careful maternal and fetal monitoring lead to high perinatal and neonatal survival rates.

**References:**


1. Von Dadelszen P, Magee LA, Taylor EL, Muir JC, Stewart SD, at el. Maternal hypertension and neonatal outcome among small for gestational age infants. Obstet Gynecol 2005; 106: 335-39.
2. Ananth CV, Keyes KM, Wapner RJ. Pre eclampsia rates in United States , 1980-2010: age period cohort analysis. BMJ .2013; 347: f6564.
3. Sibai B, Dekker G, Kupferminc M. Pre eclampsia . Lancet . 2005; 365(9461): 785-799.
4. Farag K , Hassan I, Ledger WL. Prediction of pre eclampsia. Obstet Gynecol Surv 2004; 59: 464-82.
5. Chua S, Redman CW. Prognosis of pre eclampsia complicated by 5gm or more proteinuria in 24 hours . Eur J Obstet Gynecol Reprod Biol. 1992; 43:9-12.
6. Schiff E, Friedman SA, Mercer BM, Sibai BM. Fetal lung maturity is not accelerated in pre eclamptic pregnencies. Am J Obstet Gynecol 1993; 169: 1096-1101.
7. Chari RS, Friedman SA, Schiff E, Frangieh AT, Sibai BM. Is fetal neurological physical development accelerated in pre eclampsia? Am J Obstet Gynecol 1996; 174: 829-832.

8. Crowley PA. Antenatal corticosteroid therapy : a meta analysis of the randomized trials, 1972 to 1994. Am J Obstet Gynecol . 1995; 173: 322-35.

9. Odendal HJ, Pattinson RC, Bam R , et al. Aggressive or expectant management for patients with severe pre eclampsia between 28-34 wks, gestation: a randomized controlled trial . Obstet Gynecol , 1990; 76: 1070-5.

10. American College of Obstetrician and Gynecologist ; Task Force on Hypertension in Pregnancy . Hypertension in pregnancy. Report of the American College Obstetrician and Gynecologist ; Task Force on Hypertension in pregnancy. Obstet Gynecol . 2013; 122: 11222-1131.

11. Khandelwal M , Chang E, Hansen C, et al. Betamethasone dosing interval: 12 or 24 hour apart ? A randomized noninferiority open trial. Am J Obstet Gynaecol.2012;206: 201-211.

12. Royal College of Obstetrician and Gynaecoligists. RCOG, Green-top Guideline No7. Antenatal corticosteroids to reduce neonatal morbidity and mortality. London: 2010.

13. Ganzevoor W, Sabai BM, Temporising versus interventionist management ( preterm and at term) . Best Pract Res Clin Obestet Gynecol . 2011; 25: 463-476.

14. Magee LA, Yong PJ, Espionosa V, Cote AM, Chen I, Von Dadelszen P, et al . Expectant Management of severe pre eclampsia remote from term : a structured systemic review. Hypertension in pregnancy . 2009; 28: 312-347.

15. Sibai BM .Evaluation and Management of Severe Pre eclampsia before 34 weeks gestation : a randomized controlled trial . Obstet Gynecol . 1990; 76: 1070-1075.

16. Sabai BM, Mercer BM, Schiff E, Friedman SA . Aggressive versus expectant management of severe pre eclampsiaat 28-32 weeks, gestation a randomized controlled trial . Am J Obstet Gynecol . 1994; 171: 818-822.

17. Crurchill D , Duley L, Thornton JG, Jones L. Interventionist versus expectant care for severe pre eclampsia between 24 and 34 weeks gestation. Cochrane Database Syst Rev. 2013; 26: CD 003106.

18. Sibai BM, Barton JM. Expectant management of severe pre eclampsia remote from term: patient selection , treatment and delivery indication. Am J Obstet Gynecol. 2007; 196: 1-9.

19. DJ Tuffnell, AH Shennan, JJS Waugh, JJ Walker. The management of severe pre-eclampsia/eclampsia . Royal College of Obstetrician and Gynaecologists. Guideline No 10(A) March 2006.

20. Swamy MK, Patil Kamal, Negeshu Shailaja. Maternal and perinatal outcome during Expectant Management of Severe preeclampsia Between 24 and 34 weeks of gestation. The Journal of Obstetrics and Gynecology of India . 2012; 62(4): 413-418.

21. Marozio L, Gibbone E, Palarolo G, Carbonara C, Berchialla P, et al. Expectant Management of Severe Pre eclampsia Remote from Term: A Hospital Based Survey . 2016; 1(1): 1005.

22. Hall DR, Odendall HJ, Steyn DW, et al. Expectant management of early onset severe pre eclampsia: Maternal outcome. BJOG. 2000; 107: 1252-7.

23. Magpie Trial Collaborative Group. Do women with pre eclampsia and their babies benefit from magnesium Sulphate? The Magpie Trial : a randomized placebo controlled trial. Lancet. 2002; 359: 1877- 90.

24. Mekin Sezik , Okan Ozakaya, Hulya Toyran Sezik , Elif Gul Wapar. Expectant Management of Severe Pre eclampsia presenting before 25 weeks of gestation. Med Sci Monit , 2007; 13(11): 523-527.

25. D.R. HALL, H.J Odendal, G. F Kirsten , J. Smith, D. Grove. Expectant management of early onset severe pre eclampsia : perinatal outcome . BJOG 2000; 107: 1258-1264.

26. Witting AG, Saade GR, Mattar F, et al. prediction of neonatal outcome in women with severe pre eclampsia between 24 and 33 weeks gestation. Am J Obstet Gynecol . 2000; 182:607-11.

27. Bernstein IM, Horbar JD, Badger GJ, The Vermont Oxford Network , et al. morbidity and mortality among very low birth weight neonates with intrauterine growth restriction . Am J Obstet Gynecol 2000; 182: 198-206.

28. Savita Rani Singhal, Deepika, Anshu, Smiti Nnda. Maternal and perinatal outcome in Severe Preeclampsia and Eclampsia. South Asian Federation of Obstetrics and Gynecology. 2009;193): 25-28.

29. Management of pre term labour. Practice Bulletin NO. 171. American College of Obstetricians and Gynecologists . Obstet Gynecol 2016; 128: 155-64.