



## A COMPARATIVE STUDY OF EXPECTANT VERSUS ACTIVE MANAGEMENT ON MATERNAL AND FOETAL OUTCOME IN SEVERE PRE-ECLAMPSIA PATIENTS OF 30-34 WEEKS GESTATION

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### ABSTRACT

**Objective/ purpose of study:** Severe preeclampsia is an obstetric dilemma, whether to err on the maternal side or the fetal side, since both of them are in a compromised state. Hence we did this observational study in patients of severe preeclampsia admitted to Obstetrics department of Government Mohan Kumaramangalam Medical college Hospital Salem.

**Study design:** This is an observational study with 100 patients of severe preeclampsia at 30 to 34 weeks gestation. Study was conducted over a year from July 2015 to June 2016. Group I was managed conservatively till the completion of corticosteroids, blood pressure was controlled with rational use of Anti hypertensives. Group II included patients whose pregnancy was terminated in view of maternal contraindications irrespective of completion of steroids

**Results:** Most patients were primigravida aged 21- 30 years. Mean gestational age at delivery was 32.23 (32.23± 1.18) weeks in expectant group versus 31.68 (31.68± 1.02) weeks in active management group. There was no maternal death ; maternal complications did not differ significantly in both the groups. There were 45 (90%) live births in group I while compared to 37 (74%) live births in Group II and also significant excess of mean birth weight 1.67±0.66 kg in group I over group II with 1.33±0.85 kg (P= 0.02); Though in both the groups, majority were VLBW newborns the APGAR score at 5 minutes of birth was slightly better in the expectant management group (group I).

**Conclusion:** Expectant management for severe preeclampsia results in higher birth weight and lesser need for intensive care. But this neonatal benefit must be weighed against the risk of maternal morbidity. Further randomized controlled trials are awaited in future to throw light for practice.

**KEYWORDS :** pre eclampsia, preterm labour, active management, expectant management

### Introduction:

Hypertensive disorders complicating pregnancy amounting to morbidity as well as mortality of both mother and baby is conspicuous over years as quoted by World Health organization (WHO). This is partly due to the complex pathophysiology resulting in less chances of prevention of hypertensive complications and also delayed diagnosis especially in low resource countries with yet to be met standards of antenatal care.

Pre-eclampsia is described as a rise in blood pressure and proteinuria which is of new onset occurring after 20th week of gestation. It is a multi system disorder involving placenta, blood, cardiovascular, liver, kidney and neurovascular systems occurring exclusively during pregnancy hypothesized to arise from failure of the normal development of the maternal-fetal interface in the placenta, but the exact etiopathogenesis is not known (1-3). Preeclampsia prevails in 2%-8% of all pregnancies, and globally it remains the cause for 9% to 26% of maternal deaths (4). It is an important cause of abruptio-placenta, acute renal failure, cerebrovascular complication, DIC. There is always a dilemma in the management of severe preeclampsia in preterm pregnancies, whether to err on the maternal side or on the fetal side. Since both of them together is in a compromised state, a decision in favor of one may go against the other. Hence we decided to do this observational study in patients of severe preeclampsia at 30-34 weeks of pregnancy admitted to Obstetrics department of Government Mohan Kumaramangalam Medical college Hospital Salem.

### Methodology:

This is an observational study with successively admitted patients of severe preeclampsia having 30 to 34 weeks gestation in Obstetrics department of Government Mohan Kumaramangalam Medical college Hospital Salem during July 2015 to June 2016.

Initial screening involved 172 patients among whom, 105 patients were recruited after considering the inclusion, exclusion criteria and obtaining informed written consent.

Inclusion criteria: Patients of age group- 18 to 35, with 30 to 34 weeks gestation diagnosed as severe Pre eclampsia

Exclusion criteria:

- Patient refusal to participate

- Multiple pregnancy
- Signs of imminent eclampsia
- AP Eclampsia
- Placental abruption
- Deterioration of renal function and liver function
- Oliguria
- HELLP syndrome / DIC
- Abnormal fundus examination
- IUGR
- Abnormal Doppler study of umbilical artery

Detailed medical history was noted at the time of admission taking care to elicit imminent symptoms if any, preexisting predisposing conditions for hypertension. Urine and blood investigations for hypertension complicating pregnancy done including urine analysis for albuminuria, Complete blood count, Renal function tests, liver function tests and ophthalmic examination to look for changes in fundus. A non stress test was done on admission followed by an USG for amniotic fluid status, Biophysical profile and Doppler. They were in either of the groups according to obstetrician's discretion ; Group I was managed conservatively till the completion of corticosteroids, blood pressure was controlled with rational use of Anti hypertensives (Tab Labetalol 100mg OD / BD). Pregnancy was terminated for maternal or fetal indication after 48 hours of completion of steroid course. Patients were kept hospitalized with careful maternal fetal monitoring and pregnancy prolonged as far as no detrimental signs or symptoms noted, maximum till 24 days of admission. But few patients had uncontrolled hypertension or had onset of complications, hence termination of pregnancy was done. They were designated as Group II (i.e., actively managed and termination was done irrespective of the completion of steroid course). Details of the plan of the treatment, Indications and mode of termination were noted. Maternal and fetal follow up done unto discharge/death. Maternal complications if any like Abruption, Acute Kidney injury, Ante partum / postpartum Eclampsia, Disseminated Intravascular Coagulation, HELLP syndrome, Posterior reversible Encephalopathy syndrome and pulmonary edema were noted. Fetal outcome was noted as whether live birth or still birth or intrauterine death has resulted. Neonatal outcome was recorded in terms of the need for Neonatal Intensive care, birth weight of the new born and APGAR scoring at 5 minutes of birth. Statistical methods: Data were analysed by chi-square statistics, and nominal variables were compared by Pearson chi-square statistics.

Fisher exact test was employed for less than 5 observations. Standard T test was employed for quantitative variables.

## Results

Among the 172 patients screened, 105 patients were recruited; in group I despite 48 hrs of steroid completion at 34 weeks of gestation a patient was not willing for termination. In group II three patients had gone against medical advice after delivery, further postpartum blood pressure monitoring was not done. Further one patient in group I had developed imminent symptoms so Magnesium sulphate was started and pregnancy terminated before completion of corticosteroids regimen. Hence these patients were not taken into account and final analysis was done for 50 patients in each arm. Details of patient recruitment have been show in the flow chart Fig 1.

Most of the patients were in the age group of 21- 30 years (58% and 50% in groups I and II respectively) range being 18-35 years. Majority were primigravida (60% and 64%). Baseline characteristics including gestational age at recruitment are non significant, hence comparable as tabulated in Table 1.

In group II where active management was done, only 33 (66%) patients received corticosteroids for fetal lung maturity. In group I with expectant management, termination was done for either maternal or fetal indication after 48 hours of steroid completion. In group II majority of the termination were done for maternal complications which occurred during the course of study like Abruption, oligoamnios, Eclampsia, HELLP syndrome; Vaginal delivery being the common mode. Mean gestational age at delivery was 32.23 (32.23± 1.18) weeks in expectant group versus 31.68 (31.68± 1.02) weeks in active management group. This was statistically different. (Table. 2)

Both the groups were monitored for maternal complications like Abruption, Acute Kidney injury, Ante partum / postpartum Eclampsia, Disseminated Intravascular Coagulation, HELLP syndrome, Posterior reversible Encephalopathy syndrome and pulmonary edema. There was no maternal death and to prove our hypothesis maternal complications did not differ significantly in both the groups as depicted in Fig 2.

When comparing the fetal outcome there were 45 (90%) live births in group I while compared to 37 (74%) live births in Group II. Perinatal outcome a combine measure of still births and intrauterine deaths were also compromised in the group II who underwent active management rather than in the group I who was managed conservatively till completion of steroids as shown in Fig 3. Of course it delayed the termination process by an average 6.2 days and maximum of 24 days in the expectant group.

While looking at the neonatal outcome of all the live births in both groups, majority had neonatal intensive care in group II i.e., 36/37 (97.3%) as against 33/45 (73.3%) in group I. There was a significant excess of mean birth weight 1.67±0.66 kg in group I over group II with 1.33±0.85 kg(P value 0.02); maximum birth weight was 2.45 kg. Though in both the groups, majority were Very low birth weight newborns the APGAR score at 5 minutes of birth was slightly better in the expectant management group (group I) as given in Table 3.

## Discussion

Our study has shown a higher live births, favorable Perinatal outcome and neonatal outcome in group I who were expectantly managed till the completion of steroids rather than in group II who were actively terminated irrespective of completion of steroids; at the same time the scenario of maternal outcome remained almost the same in both the groups. A similar recent retrospective study with 194 patients of 24 to 34 weeks gestation concludes that expectant management of severe preeclampsia is an effective option. Median gestational age at delivery in both groups was 31 weeks' gestation. Mean prolongation of pregnancy in the expectant management group was 7 days (range 4-19). Perinatal / neonatal outcomes were similar in both the groups in their study. (5)

Since the study was conducted in a government tertiary care centre with free hospital care for patients, duration of the hospital stay and economical impacts of both the groups were not analyzed. Our study or any observational study in this preview encounters selection bias since it may prove unethical to prolong the pregnancy with impending

maternal complications. It also lacks comparable distribution of confounding factor like steroid administration on neonatal outcome. But quite a few randomized trials were done in this perspective as revealed by a search using key words "preeclampsia", "preterm", "active management," "steroids," "expectant management", "hypertension", "pregnancy" in PUBMED, EMBASE and WILEY.

Recent Cochrane review in 2018 by Churchill D et al revealed that there were only six randomized trials with 748 women and that expectant management may be associated with decreased morbidity for the baby like intraventricular hemorrhage, hyaline membrane disease and need for ventilator care; further they concluded that larger trials are needed.(6)

So far there are differences of opinion and termination of pregnancy in preterm severe preeclampsia patients lacks consensus. NICE guidelines recommends "Don't do same day delivery in preeclampsia less than 34 weeks" and that delivery should be offered if there is refractory severe hypertension or maternal or foetal indications, after discussion with neonatal and anaesthetic teams and a course of corticosteroids has been given (7). Also ACOG recommends wait for 24-48 hours for maternal stabilisation (8). But WHO lays emphasis in avoiding iatrogenic preterm delivery and those Preeclampsia patients with gestational age 1-2 weeks less than the locally accepted threshold of foetal viability should be expectantly managed (9).

Further it is proposed from long time that women affected with Preeclampsia during pregnancy and postpartum are likely to suffer long term health hazards like chronic hypertension and cardiovascular disease (10); to add on, the children born out of such pregnancy events are also at risk of metabolic syndrome, chronic hypertension at earlier age and cardiovascular involvement(11)

With prediction of preeclampsia being still hypothetical, unmet standards of antenatal care still rampant, the risk of preeclampsia occurring before term its diagnosis and management are widely prevailing as a true challenge in maternal and foetal care.

## Conclusion:

Severe preeclampsia undoubtedly is associated with significant maternal and fetal health hazards. It's often encountered with a difficult decision of continuing the pregnancy versus termination especially if it is a preterm pregnancy. Expectant management for severe preeclampsia results in a favorable neonatal outcome in terms of higher birth weight and lesser need for intensive care. But this must be weighed against the risk of maternal morbidity. Hence this study result may be interpreted with caution and needs more randomized controlled trials for validation.

## Acknowledgement:

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**Conflict of interest:** None

**Financial support:** None

**Table.1 Baseline characteristics**

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Parameters	Group I (Expectant) N=50 n (%)	Group II (Active) N=50 n (%)	P-value (chi-square)	
<b>Maternal age</b>	<20 years	9 (18)	7 (14)	0.418
	21-30 years	29 (58)	25 (50)	
	>30 years	12 (24)	18 (36)	
<b>Gravidity</b>	Primi	30 (60)	32 (64)	0.68
	Multi	20 (40)	18 (36)	
<b>Gestational age</b>	30-32 weeks	35 (70)	33 (66)	0.66
	32-34 weeks	15 (30)	17 (34)	
	*Mean gestational age	31.61±1.09	31.61± 1.05	

\*\*\* P<0.05 significant, P>0.05 not significant

**Table.2 Results**

Parameters	Group I (Expectant) N=50 n (%)	Group II (Active) N=50 n (%)	P-value (chi-square)
<b>Gestation at delivery</b>			
30-32 weeks	17 (34)	29 (58)	0.02***
32-34 weeks	33 (64)	21 (42)	
*Mean gestational age at delivery	32.23±1.18	31.68±1.02	0.01***
<b>Steroids course</b>			
completed	50 (100)	33 (66)	0.001***
Not completed	0	17 (34)	
<b>Indication of termination</b>			
Fetal	21 (42)	7 (14)	0.002***
Maternal	29 (58)	43 (86)	
<b>Mode of delivery</b>			
vaginal	31 (62)	34 (68)	0.529
cesarean	19 (38)	16 (32)	

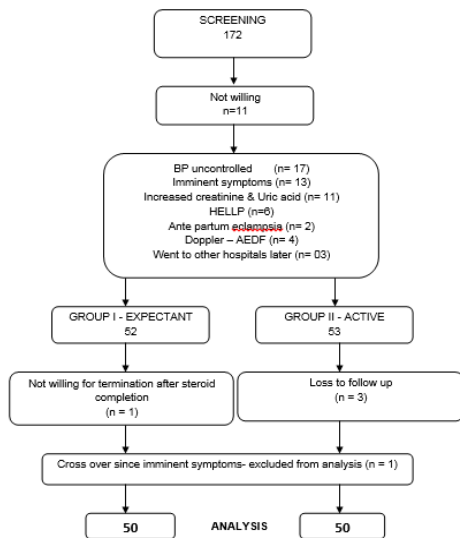
\* Mean + SD, \*\*\* P<0.05 significant, P>0.05 not significant

**Table.3 Neonatal outcome**

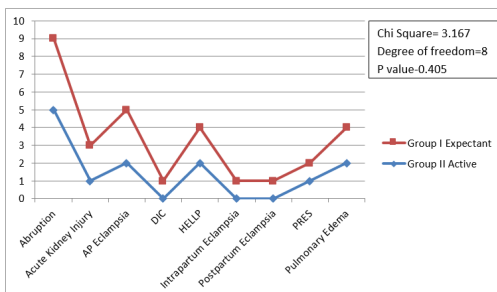
Parameters	Group I (Expectant) n=45 n (%)	Group II (Active) n=37 n (%)	P value
<b>Neonatal intensive care</b>			
Given	33 (73.3)	36 (97.3)	0.005***
Not given	12 (26.7)	1 (2.7)	
<b>Birth weight</b>			
ELBW (1-1.5 Kg)	4 (8.9)	5 (13.5)	0.467
VLBW (1.5-2 Kg)	24 (53.3)	23 (62.2)	
LBW (2-2.5 Kg)	17 (37.8)	9 (24.3)	
*Mean birth weight (Kg)	1.67± 0.65	1.33 ± 0.85	0.02***
<b>APGAR at 5 min</b>			
<5	12 (26.7)	14 (37.8)	0.34
>5	33 (73.3)	23 (62.2)	

\* Mean + SD, \*\*\* P<0.05 significant, P>0.05 not significant

**Figure 1: Flow chart of recruitment in the study**

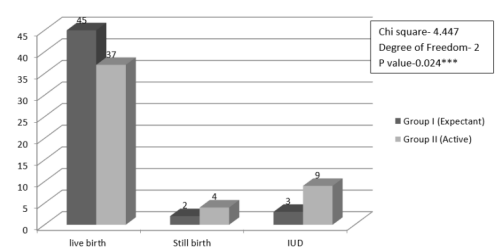


**Figure 2 Maternal complications**



\*\*\* P<0.05 significant, P>0.05 not significant

**Figure 3 Fetal outcome**



\*\*\* P<0.05 significant, P>0.05 not significant

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