Section: Obstetrics and Gynaecology

Original Research Article

A STUDY ON MATERNAL AND FETAL OUTCOMES IN EARLY ONSET PRE-ECLAMPSIA AT NILOUFER HOSPITAL, TELANGANA STATE

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Abstract

Background: Pre-eclampsia is a multi-system condition that only develops during pregnancy and affects the placenta, kidney, liver, blood, Cardiovascular and neural systems. There is higher risk of acute renal failure, heart and brain problem, placental abruption, DIC and even maternal death. **Materials and Methods:** This is a prospective analytical study conducted at our hospital. 150 patients with pregnancies having early onset pre-eclampsia at Niloufer Hospital have been studied over a period of 18 months between March 2021 to September 2022. **Result:** In our study, most of the women were in 32–34 weeks of gestational age. Mean gestational age at diagnosis was 31weeks. 56% of patients underwent termination of pregnancy after 32weeks, the most common maternal indication being imminent eclampsia in 128 (85.3%). Most common fetal indication was Doppler changes. Both maternal and fetal morbidity and mortality were more during early gestational age, 52.3%and 95.2% at gestational age 24 and 28 weeks respectively. 58 (38.6%) women experienced complications. Eclampsia and abruption were highest accounting to 17(11.3%) and 14(9.3%) respectively. In this study, out of the total 150 babies, 90(60%) babies had complications. Out of 90 babies 25(16.6%) were IUFDs, the cause being abruption in majority of cases. **Conclusion:** Early diagnosis and individualised management of pre-eclampsia is the corner stone for decreasing the risk of maternal and fetal mortality and morbidity. It is associated with more maternal complication and worse perinatal outcome if not managed judiciously. In cases of severe uncontrolled blood pressure with complications, termination should be performed regardless of fetal maturity.

INTRODUCTION

Preeclampsia is a multisystem condition that only develops during pregnancy and affects the placenta, kidney, liver, blood, cardiovascular, and neurovascular systems. Its cause is unknown.

Pre eclampisa is defined as new onset increase in Blood Pressure and proteinuria that happens after 20 weeks of pregnancy. If there is significant rise in blood pressure, proteinuria or the emergence of symptoms related to end organ damage, it is referred to as severe pre-eclampsia. If proteinuria and an increase in blood pressure start before 34 weeks of pregnancy, it is said to be early onset pre-eclampsia. Preeclampsia has a prevalence of 2.3 % The risk factors associated with pre-eclampsia are Primi, <18years, >35 years, BMI >35, Previous history of pre-eclampsia, family history of pre-eclampsia, gestational diabetes mellitus, Diabetes mellitus type 2, chronic hypertension, Nephropathy, thrombophilias, multiple gestation, hydrops fetalis, Hydatiform mole. There are various theories that have been proposed in the cause of pre-eclampsia. There is higher risk of acute renal failure, heart and brain problems, placental abruption, disseminated intravascular coagulation, and even maternal death.[1] During the perinatal period there is a progressive decline in the mother's health and high mortality in the foetus in cases of early-onset severe preeclampsia.[2,3] All of these complications are thought to be avoidable solely by delivering the foetus. Therefore, it is necessary to end the pregnancy if there is foetal discomfort, if many organs are dysfunctional, or if the gestational age surpasses 34 weeks. However, premature birth

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brought on by early termination results in substantial perinatal morbidity and mortality.[4,5] Although foetal lung development does not occur, expectant care to extend pregnancy can be harmful to the mother.[6] Therefore, possible advantages for the foetus should be balanced against potential risks to the mother.

Aim of the Study

1. To study the maternal and perinatal outcomes in early onset pre eclampsia.
2. Observational analytical study of demographic pattern, etiology, maternal morbidity and mortality, fetal and mortality associated with Hypertensive disorders of pregnancy.

MATERIALS AND METHODS

The study was conducted on 150 Patients in the Department of Obstetrics & Gynaecology at Niloufer Hospital, Hyderabad. All the patients between 26 to 34 weeks with systolic blood pressure > 140 mmHg or Diastolic blood pressure > 90 mmHg with or without proteinuria more than 1mg/dl were studied.

Inclusion Criteria

- Gestational age >=26weeks and < 34 weeks
- Diastolic BP >= 90 mmHg
- Systolic bp >=140 mmHg
- Proteinuria >1mg/dl

Exclusion Criteria

- Pregnant women with thyroid disorders.
- Pregnant women with heart disease.
- Pregnant women with APLA, Thrombophilia, SLE.
- Pre-existing chronic renal and hepatic diseases
- Idiopathic hemolytic anemia.
- Idiopathic thrombocytopenic purpura
- Epilepsy
- Pregnant women with secondary causes of hypertension.

RESULTS

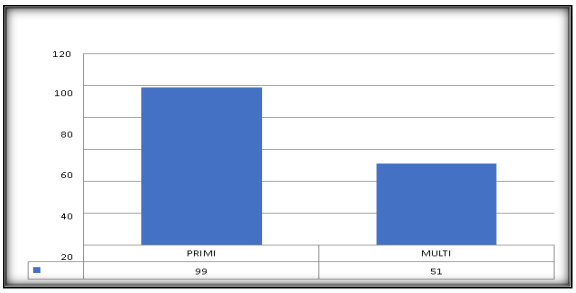

Figure 1: Parity

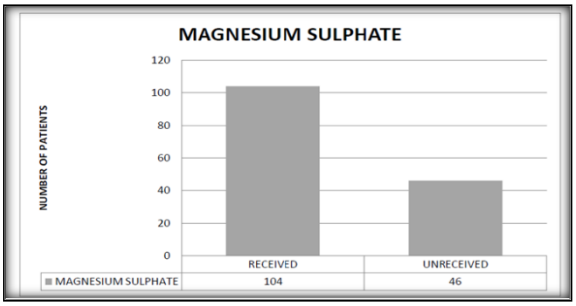

Figure 2: Magnesium Sulphate

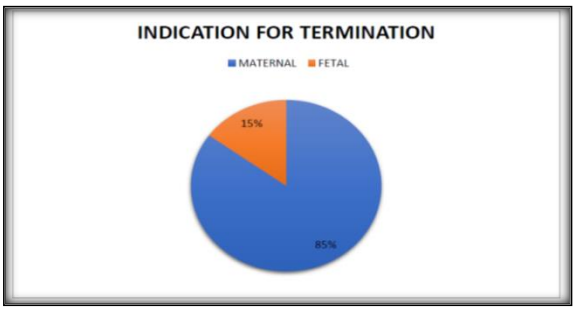

Figure 3: Indication for Termination of pregnancy

Table 1: Age Distribution

Age	Number of Patients	Percentage (%)
<20	33	22
21-30	90	60
>30	27	18
Total	150	100

Table 2: Gestational Age at Diagnosis

Ga At Diagnosis (Weeks)	Number of Patients	Percentage
24–28	21	14
28–32	53	35.3
32–34	76	50.7
Total	150	100

Table 3: Gestational Age at Delivery

Ga At Delivery (Weeks)	Number of Patients	Percentage (%)
24-28	13	8.7
28-32	51	34
32-34	84	56
>34WEEKS	2	1.3

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Table 4: Investigations

Investigations	Number of Patients	Percentage (%)
Hyperuricemia	78	52
Altered LFT	30	20
Thrombocytopenia	23	15.3
Altered RFT	30	20
Fundoscopy Change	33	22
Doppler Changes	12	8

Table 5: Mode of Delivery

Gestational Age at Delivery	Vaginal	Caesarean	Total
24-28	7	6	13
28-32	19	32	51
32-34	20	64	84
>34	0	2	2
Total	46	104	150

Table 6. Gestational Age Diagnosis Vs Outcome

GA at Diagnosis (Weeks)	Number of Patients	Maternal Morbidity and Mortality		Fetal Morbidity and Mortality	
		Number	%	Number	%
24–28	21	11	52.3	20	95.2
28–32	53	20	37.7	37	69.8
32–34	76	25	32.8	33	43.4
Total	150	58	38.6	90	60

Table 7: Maternal Outcome

Maternal Outcome	Number of Patients	Percentage (%)
Eclampsia	17	11.3
Abruption	14	9.3
Wound Infection	8	5.3
Postpartum eclampsia	3	2
HELLP	3	2
DIC	3	2
ARF	2	1.3
Atonic PPH	2	1.3
Death	6	4
Total	58	38.6

Table 8: Fetal Outcome

Fetal Outcome	Number of Babies	Percentage (%)
IUFD	25	27.8
IUGR	15	16.6
Death	16	17.8
RDS	13	14.4
HIE	2	1.3
RDS +HIE	9	10
SEPTICEMIA	6	6.7

Birth Weight (Grams)	RDS		PND		ALIVE	
	NO	%	NO	%	NO	%
500-999			7	100		
1000-1499	15	35.7	10	23.8	32	76.1
1500-1999	10	16.3	3	4.9	58	95
>2000	-		-		14	93.3
STILLBORN		4		4.5		
Total		90		100		

Table 9: Birth Weight vs Fetal Outcome

Table 10: Post Partum BP Control

Bp Control	Number of Patients	Percentage
<3 DAYS	18	12.5
3-7	107	74.3
8-14	16	11.1
>14	3	2.1

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DISCUSSION

Our hospital being tertiary care centre, there was increased prevalence of cases, to have better understanding of the topic, sample size was increased from 100 to 150. Mother and newborn are both impacted by preeclampsia. It is a major contributor of maternal and foetal morbidity and mortality. 60 (60%) of the study group's participants were between the ages of 21 and 30. which is consistent with Moodley,[7] studies, in which the average age was 26 years. The mean age was 26 years in investigations conducted by Brown MA and Buddle ML,[8] D.R. Hall.[9] The average age in our study was 26 years. First pregnancies frequently result in preeclampsia. 99 (66% of the study's female participants) were nulliparous. According to Pr Brown MA and Buddle ML,[8] preeclampsia is more common in nulliparous women. Only 43 (28.6%) of the women in this study group exhibited risk factors, such as past gestational hypertension and a family history of hypertension. 36% of the women in the D.R. Hall,[9] study's had risk factors. The majority of the women, 85 (56.7%), and 64 (42.6%), respectively, belonged to socioeconomic classes IV and V. In our study, the mean gestational age at diagnosis was 31 weeks. The relationship between gestational age at diagnosis and foetal outcome was favourable.

Early Preeclampsia causes more foetal complications, with 95.2% of cases occurring between 24 and 28 weeks of pregnancy versus 43.4% after 32 weeks.

In 52% of the patients, there was a high level of serum uric acid. A better predictor of the prognosis of the foetus than blood pressure is uric acid, which is utilised as a measure of illness severity.[10]

A sign of the severity of preeclampsia is a platelet count of less than 100,000 mm^3 15.3% of the female participants in this study had low platelet counts. Because of an increase in consumption and destruction within the vessel lumen, platelet count is lowered.

Thirty patients (20%) exhibited abnormal renal functions, and eleven (7.3%) had altered coagulation profiles. Fundal changes of grade I and grade II were found in 33 (22%) of patients in which Grade I and Grade II were 22(14.7%) and 11(7.3) respectively. Pregnancy termination was not indicated by ophthalmological symptoms such papilledema or retinal detachment.

Maternal mortality and seizure risk are both decreased by magnesium sulphate.

In our study, only 69.3% of patients with severe preeclampsia received magnesium sulphate, which is low when compared to other studies.[11,12]

97% of the patients in a study by Lee WO' Connell CM and Baskett received magnesium sulphate.[13]

When given to patients with severe preeclampsia, magnesium sulphate reduces the likelihood of seizures by 58%.

Routine prophylaxis in patients with severe preeclampsia, however, is debatable, and the choice of treatment depends on whether it will be conservative or immediate termination.

The majority of the patients, 84 (56%) underwent pregnancy termination between 32 and 34 weeks.

The GA at the time of birth was determined to be 32–34 weeks in the D.R. Hall study. With longer gestation periods, APGAR was found to be improving.

Early gestational age was shown to have a significant rate of foetal morbidity and mortality; perinatal death was 38.4% at 24–28 weeks and 6% at 32–34 weeks.

RDS was high between 24- 28 compared to 28 -32 weeks, with rates of 30.7% and 13.7%, respectively.

Improvements in newborn survival were seen by Dehram et al,[14] as gestational age increased.

The most frequent reason for termination of pregnancy was determined to be maternal indication in 128 (85.3%) cases and foetal cause in 22 (14.7%).

The most frequent reason for maternal indication for termination was imminent eclampsia. In the Blackwell SC study from 2002, 80% of patients underwent termination for a maternal reason and 20% for a foetal reason.

Although preeclampsia is one of the risk factors for prematurity, caesarean sections or inducement of labour are the most common iatrogenic causes of prematurity in order to reduce maternal and foetal morbidity and mortality

Although delivery is the only guaranteed treatment for preeclampsia, foetal prognosis should be taken into account in the absence of any complications for the mother.

In this study, caesarean sections were used to birth nearly 69% of the women.

This rate is higher than that stated by Mashiloane and Moodley,[15] but comparable to that of Hall et al,[9] who reported an 81.5% caesarean delivery rate.

Study	Vaginal Delivery	Caesaren
Hall et al,[9]	18.5%	81.5%
Nassar et al,[16]	48.3%	51.7%
Railton and allen,[17]	25%	75%
Murphy,[18]	20%	75%
Our study	31%	69%

Our research has a better correlation with Railton's than Nassar and a lower correlation with Hall and Murphy. 71 (47.3%) of the 120 infants (excluding the 25 IUFDs and the 4 stillborns) had an APGAR of 5-7. The APGAR score was observed to rise with gestational age. At 24 to 28 weeks, only 5.6% of newborns had an APGAR of 5-7.

65 (43.3%) cases of low birth weight, which is defined as 1.5 – 2.5kg, were reported. 53 (35.3%) cases of very low birth weight (1.5 kg) and 17 (11.3%) cases of extremely low birth weight (1 kg) were reported. The average newborn weighed 1.43 kg.

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In the study by DR Hall et al,[9] and the study by Sibai et al,[19] the mean birth weight was 1.4 kg and 1.62 kg, respectively.

As birth weight rises, the death rate and neonatal morbidity rapidly decline. PND was 100% in babies born under 1 kg, however there were no perinatal deaths in babies born over 2kg. As the birth rate rises, perinatal survival improves, according to Odendal et al.[20]

The mother's safety must come first in the treatment of severe preeclampsia, followed by the delivery of a live baby who won't need intensive neonatal care.

In our study, 38.6% of the participants had maternal morbidity or death. The greatest percentages of abruption and eclampsia were 17 (11.3%) and 14 (9%), respectively. Other issues included HELLP, DIC, and ARF. In our analysis, there were 6 (or 4%) maternal deaths. Maternal mortality was found to be 1.8% in a 2012 study by Manisha et al. in New Delhi.

Study	Abruption	Pulmonary Odema	HELLP	Eclampsia	Renal Failure
DR Hall,[9]	20%	2%	5%	1.2%	0.3%
Vissur & wellenburg,[21]	5%	-	-	1.9%	-
Murphy DJ,[14]	1.5%	-	21%	1.4%	1.3%
Olah & edman,[22]	-	-	14.2%	-	3.5%
Manish et al	1.9%	1.9%	10.4%	12.8%	-
Our study	10%	1.3%	3.3%	14.6%	2%

According to Witlin et al,[23] respiratory distress syndrome decreased with gestational age and neonatal prognosis in early-onset severe preeclampsia was directly correlated with birth weight.

90% of the neonates in our research needed neonatal ICU care. Hyaline membrane disease, HIE, IUGR, septicemia, and newborn mortality were the main neonatal consequences.

In their research of 254 women with severe preeclampsia between 20 and 32 weeks, Visser and Wallenburg,[21] found a mean pregnancy extension of 14 days and a perinatal death rate of 20%.

In their study, Hall et al revealed that the average length of pregnancy was 11 days, and the perinatal mortality rate was 24%. The average length of pregnancy, according to Odendaal et al. in 1990, was 7.1 days.

In our research Out of 32 individuals who had a pregnancy extension, 27 (87.4%) had a pregnancy extension of 10 days. There was a 25-day maximum extension.

With a range of 1 to 25 days, the average number of days gained was 7 days. Fetal morbidity and death were 9 (28.1%) and 2 (6.2%), respectively. No babies were born still. Patients born at 29 weeks experienced two infant deaths.

In the group of patients who were expecting, there were no maternal deaths, and 4 (12.5%) of the patients developed complications like PP Eclampsia, HELLP, ARF, and Eclampsia.

The majority of individuals had their blood pressure under control within a week. Antihypertensives were only given to 7 individuals upon discharge.

Most of the women's prolonged hospitalisations were done for the benefit of the baby. The average length of postpartum hospitalisation in D.R. Hall's study was 5 days.

CONCLUSION

- Preeclampsia with an early onset is associated with serious problems for both the mother and the foetus
- For improved maternal and foetal outcomes, early booking is crucial.
- A pregnancy termination decision must be made based on both maternal and foetal considerations.
- In cases of severe, uncontrolled blood pressure with complications, termination should be performed regardless of foetal maturity.
- The foetal prognosis is improved by a good NICU.
- In selected cases expectant management in a tertiary care centre limit the impact of serious maternal and fetal complications.

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