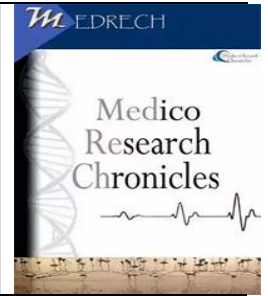




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A study of hematological profile and outcome in neonates born to mothers with pre-eclampsia and eclampsia in a rural tertiary care hospital in western Maharashtra

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ABSTRACT

Aims and objectives: To study the hematological profile and outcome of neonates born to preeclampsia and eclampsia mothers in rural tertiary care hospital.

Materials and methods: This was a hospital based descriptive type of cross-sectional study in Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni. It was carried out over a period of 1 year that is from September 2022 to September 2023. All neonates born to preeclampsia and eclampsia mothers being admitted in Dr.B V P Pravara Rural Hospital were included in the study.

Babies born with Congenital malformation and those born to mothers with other problems like rhesus incompatibility, severe anemia, renal disease, heart disease, connective tissue disease were excluded from the study.

Results: In the present study 65% babies were preterm, 34% babies were more than 37 weeks, 54.5% babies were born via normal vaginal delivery 45.5% babies were born via caesarean section, 15% babies have thrombocytopenia, 6% were <1kg birth weight, 14% were in 1-1.5 kg range, 79% were in >1.5 to 2.5 kg range.

Conclusion: Babies delivered to hypertensive mothers are more likely to experience a variety of difficulties, it is important to closely monitor these infants in an effort to reduce morbidity and promote better growth, development, and survival.

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INTRODUCTION:

Hypertensive disorders in pregnancy are a major cause of maternal and perinatal morbidity and mortality¹. The infants of

hypertensive mothers have a significantly higher incidence of somatic growth retardation, low APGAR scores, delayed adaptation, leucopenia and thrombocytopenia².

Weight at birth, dependent almost entirely on maternal factors, is the single most important factor determining survival and health development of babies³.

Preterm birth is a common complication of infants born to hypertensive mothers, either due to spontaneous onset of labor or to the obstetric conduct of interrupting the pregnancy due to the compromised maternal-fetal health. Prematurity increases perinatal mortality and morbidity rates with immediate or late sequelae⁴. Approximately one-third of the babies born to mothers with hypertensive disorders have decreased platelet count at birth, but the counts generally increase rapidly to normal levels. 40%-50% of newborns have neutropenia that generally resolves before three days of age. These infants may be at an increased risk of neonatal infections⁵.

Preeclampsia is associated with adaptive changes in the fetal circulation and the placentally derived factors implicated in the pathogenesis of maternal manifestations of the disease are known to contribute to the development of growth restriction and neonatal thrombocytopenia. Occurrence of severe neonatal thrombocytopenia was reported to be significantly associated with prematurity and low birth weight. Preterm and low birth weight babies born to mothers with gestational hypertension, preeclampsia and eclampsia would require follow-up for thrombocytopenia in the early days of neonatal period⁶.

MATERIAL AND METHODS:

This was a hospital based descriptive type of cross-sectional study in Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni. It was carried out over a period of 1 year that is from September 2022 to September 2023. A total of 99 neonates born to preeclampsia and eclampsia mothers being admitted in Dr.B V P Pravara Rural Hospital were included in the study.

Babies born with Congenital malformation and those born to mothers with other problems like rhesus incompatibility, severe anemia, renal disease, heart disease, connective tissue disease were excluded from the study.

Detailed maternal history like age, parity, gestational age, onset of symptoms, blood pressure recording, presence of seizures and proteinuria were recorded. Details of mode of delivery, presence of complications if any during labor were also recorded. Details of baby like- mother's name, sex, date of birth, time of birth, gestational age were recorded. General and physical examination of the neonates was done to include anthropometric parameters –length, weight, ponderal index were recorded. Blood sample was collected at birth from the neonates and studied for Complete hemogram, liver function tests, renal function tests, serum calcium, serum magnesium.

Statistical analysis- Data was entered into Microsoft excel data sheet and was analyzed using SPSS 22.0 version software. The independent student 't' test is used. The p-value <0.05 was considered as statistically significant.

OBSERVATION AND RESULTS:

Table 1: Distribution of study subjects based on gestational age

Gestational age	Pre-eclampsia (N=75) N (%)	Eclampsia (N=24) N (%)	Total (N=99)
< 34 weeks	9 (12%)	14 (58.3%)	23
34 – 37 weeks	36 (48%)	6 (25%)	42
> 37 weeks	30 (40%)	4 (16.7%)	34
Chi square test value = 35.98 , p < 0.001** (highly statistically significant difference)			

In preeclampsia group gestational age of 9(12%) mothers was less than 34 weeks, 36(48%) mothers were 34 to 37 weeks and 30(40%) mothers was more than 37 weeks.

In eclampsia group 14(58.3%) mothers gestational age was less than 34 weeks,6(25%)

mothers were 34 to 37 weeks and 4(16.7%) mothers was more than 37 weeks. There was highly statistically significant difference between preeclampsia and eclampsia. In total study group, 65% babies were preterm , 34% babies were more than 37 weeks.

Table 2: Distribution of study subjects based on mode of delivery

Mode of delivery	Preeclampsia (N=75) N (%)	Eclampsia (N=24) N (%)	Total
Normal Delivery	54 (72%)	0	54
LSCS	21 (28%)	24 (100%)	45
Chi square test value = 51.23, p <0.001** (highly statistically significant difference)			

In preeclampsia (75) group 21(28%) babies via caesarean section and 54 (72%)babies born via normal vaginal delivery where as in eclampsia (24)group all babies are born via caesarean section.

In this study, 54.5% babies were born via normal vaginal delivery 45.5% babies were born via caesarean section.

Table 3: Distribution of study group based on birth weight

Birth weight	Preeclampsia (N=75) N (%)	Eclampsia (N=24) N (%)	Total
< 1 kg	2 (2.7%)	4 (16.7%)	6
1 kg – 1.5 kg	6 (8%)	8 (33.3%)	14
> 1.5 kg – 2.5 kg	67(89%)	12 (50%)	79
Chi square test value = 18.95 , p < 0.001** (highly statistically significant difference)			

In preeclampsia group 2.7% were in <1 kg;8%in 1 to 1.5 kg range; 89% in 1.5 to 2.5kg range. In Eclampsia group 16.7% is <1kg; 33.3% between 1 to 1.5 kg; 50% in 1.5 to 2.5 kg range. Among 99 babies,6 was <1kg,14 was in 1-1.5 kg range,79 was in >1.5 to 2.5 kg range.

Table 4: Distribution of study group based on platelet count

Platelet count (Per cumm)	Preeclampsia (N=75) N (%)	Eclampsia (N=24) (%)
< 84,000	8 (10.7%)	7 (29.2%)
≥ 84,000	67 (89.3%)	17 (70.8%)
Chi square test = 16.54 , p < 0.001** (highly statistically significant difference)		

In preeclampsia group 8 babies (10.7%) had thrombocytopenia and 67(89.3%) babies had normal platelet count. In eclampsia group 7 babies (29.2%) had thrombocytopenia and 17(70.8%) babies had normal platelet count. In total study group, 15 % babies have thrombocytopenia , 84% babies have normal platelet count.

DISCUSSION:

Our study shows that 65% babies were preterm and this proved a statistical significance in our study. This is comparable with study conducted by Sikha Maria Siromani et al⁷ which showed 63% preterm babies with statistical significance and in study

done by Madavi D et al⁸ 69% babies were preterm and 31% were term babies.

Among the total babies in our study group 45 % were born by LSCS delivery out of which 24% were eclampsia mothers and 21% were pre-eclampsia, 54% babies were born by normal vaginal delivery and all of these were pre-eclampsia mothers. In others studies done by Madavi D et al⁸ the rate of LSCS delivery were high i.e. 68.96%. Similar results were found in other studies done by Sikha Maria Siromani et al⁷ (63.01%), Solange Regina et al⁹ (66.7%).

In the present study among 99 babies, 6 was <1kg, 14 was in 1-1.5 kg range, 79 was in >1.5 to 2.5 kg range. Other studies done by Madavi D et al⁸ showed 22 % were <1 kg , 31 % between 1 to 1.5 kg range , 36 % were in between 1.5 kg to 2.5 kg range.

In our study 15 % babies have thrombocytopenia , 84% babies have normal platelet count. Other studies - conducted by Sandhya Sivakumar et al¹⁰ 22% babies.

CONCLUSION:

Babies delivered to hypertensive mothers are more likely to experience a variety of difficulties, it is important to closely monitor these infants in an effort to reduce morbidity and promote better growth, development, and survival. To prevent and detect preeclampsia, all pregnant women must receive appropriate antenatal care. Public health awareness, education of the primary health care workers and improvement of socio-economic circumstances can help to improve the neonatal prognosis.

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