



A STUDY ON HEMATOLOGICAL PROFILE AND IMMEDIATE OUTCOME OF BABIES BORN TO GESTATIONAL HYPERTENSIVE MOTHERS, GEMS HOSPITAL, SRIKAKULAM.

Paediatrics

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ABSTRACT

BACKGROUND: To study the haematological profile and clinical outcome of neonates born to mothers with hypertensive disorders of pregnancy. To compare the outcome between neonates born to hypertensive mothers and neonates born to normotensive mothers.

MATERIALS & METHODS: The present study was a cross-sectional observational study conducted in a tertiary care hospital at Great Eastern Medical School, Hospital, Srikakulam from September 2019 to February 2020 with 60 neonates born to gestational hypertensive mothers, and 60 neonates born to normal mothers.

RESULTS: In the present study, preterms were present in 65% of cases compared to 25% of controls. IUGR was present in 60% of the cases, and 40% of controls. Hypoglycemia was present in 28.3% of the cases, and 5% of controls. Thrombocytopenia was seen in 30% of the cases, and 3.3% of controls.

CONCLUSION: According to this study, complications were more common among neonates born to gestational hypertensive mothers than neonates born to normal mothers.

KEYWORDS

Gestational hypertensive mothers, Neonates, Clinical outcome, Haematological profile.

INTRODUCTION:

Hypertension is the term used to describe an increase in blood pressure above normal levels.^(1,2) Such elevated levels of blood pressure when occurs in pregnancy, is termed as Pregnancy-induced hypertension (PIH). PIH is defined as "Blood pressure of $\geq 140/90$ mm Hg that was detected first time during pregnancy after 20 weeks of gestational age and returns to normal blood pressure level within puerperal period and is not related to preeclampsia."⁽²⁾

Depending on the severity of PIH, the uteroplacental blood supply will diminish, which leads to perinatal complications in the mother, foetus as well as in neonate.

In normal pregnancy, various physiological adaptations of blood parameters occur. In contrast to this, in PIH, various blood dyscrasias will develop. According to the literature available, both decreased neutrophils, and reduced platelet count are well pronounced in the neonates of hypertensive mothers. Most often Neutropenia presents as congenital neutropenia⁽³⁾, and reduced platelet count manifests at the time of birth in many cases or within 72 hours after delivery.⁽⁴⁾

These platelet abnormalities in the newborns manifest as bleeding disorders and can lead to sepsis. Hence early haematological screening of the neonates born to PIH mothers can help in early detection and intervention to reduce morbidity and mortality of newborns.

- This study was aimed to understand the role of the haematological profile and the immediate outcome of neonates born to gestational hypertensive mothers.

Aims & Objectives:

- To study the haematological profile and clinical outcome of neonates born to mothers with hypertensive disorders of pregnancy.
- To compare the outcome between neonates born to hypertensive mothers and neonates born to normotensive mothers.

Materials & Methods:

- Study design:** Cross-sectional observational study.
- Study setting:** Great Eastern Medical School, Hospital, Srikakulam.
- Study population:** Sixty neonates born to gestational hypertensive mothers were taken as cases and 60 neonates born to normal mothers were taken as controls.
- Study period:** From September 2019 to February 2020.

INCLUSION CRITERIA:

- Pregnant women with a systolic blood pressure of ≥ 140 mm of Hg and diastolic blood pressure of ≥ 90 mm of Hg and their offspring were included in cases.
- Pregnant women with normal blood pressure recordings with regular antenatal checkups with no medical and surgical comorbidities and their offspring were considered as controls.

EXCLUSION CRITERIA:

- Neonates born to mothers with comorbidities other than hypertension.
- Neonates left against medical advice.
- Data analysis:** Data analysis was done by using Microsoft Excel and SPSS version 25. A Chi-square test was applied. P-value < 0.05 was considered statistically significant. Results were expressed in terms of percentages, charts and tables.

Observations & Results:

The present study was conducted with 60 cases and 60 controls after obtaining consent from the parents.

Table 1: Comparison Of Clinical Outcome Between Cases And Controls

Parameter	Cases (n=60)	Controls (n=60)	P value
Preterm	39(65%)	15(25%)	0.0001*
IUGR	36(60%)	24(40%)	0.028*
NICU admission	34(56.7%)	18(30%)	0.003*
HMD	18(30%)	14(23.3%)	0.409
MAS	12(20%)	10(16.7%)	0.637
HIE	7(11.7%)	4(6.7%)	0.513
IVH	4(6.7%)	1(1.7%)	0.343

* significant

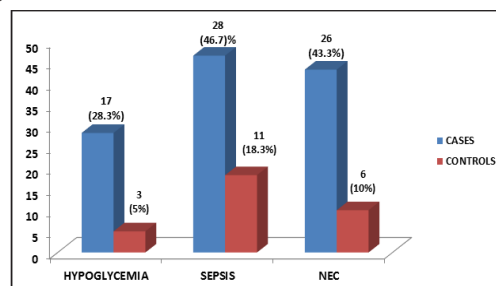


Figure 1: Distribution Of Metabolic And Other Abnormalities Between Cases And Controls

In the present study, as shown in Fig 1, hypoglycemia was present in 28.3% of the cases, and 5% of controls. Necrotizing enterocolitis (NEC) was observed in 48.3% of the cases, and 10% of controls. Sepsis was seen in 46.7% of the cases, and 18.3% of controls. A statistically significant (<0.05) difference was observed between cases and controls for all these parameters.

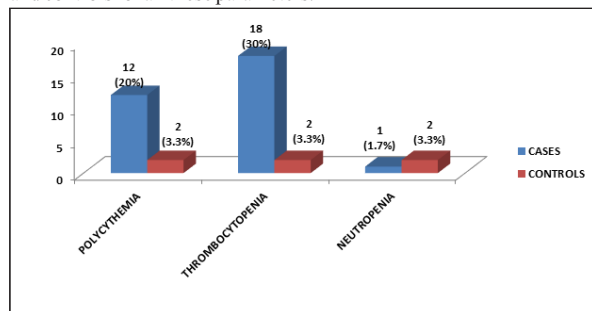


Figure 2: Distribution Of Haematological Abnormalities Between Cases And Controls

Regarding distribution of hematological abnormalities (Fig 2), Polycythemia was present in 20% of cases, and 3.3% of controls. Thrombocytopenia was seen in 30% of cases, and 3.3% of controls, and Neutropenia was observed in 1.7% of cases, and 3.3% of controls. Except neutropenia, remaining hematological parameters had shown a statistically significant (<0.05) difference between cases and controls.

DISCUSSION:

Preterm:

In this study, more preterm neonates were present in cases (65%) than the controls (25%), and the difference between the two groups was statistically highly significant (P value 0.0001). With this finding, it can be concluded that hypertensive disorders of pregnancy had a role on gestational period. This finding of more preterm neonates in cases (65%) was in accordance with Kalavakurumouna et al. (70%), Tiwari et al. (44.4%), and Jaicom Dagar et al. (29%) studies.^(5,6,7)

Intra Uterine Growth Retardation (IUGR):

In the present study, IUGR was present in 60% of the cases, whereas it was seen in only 40% of controls, and this difference between the two groups was statistically significant (p value 0.028). Hence it was proved that maternal hypertensive disorders had an impact on intrauterine growth. This finding of higher incidence of IUGR neonates in cases (60%) was similar to the Kalavakurumouna et al. (55%), and Tiwari et al. (20.4%) studies.^(5,6)

Nicu Admission:

In this study, 56.7% of cases were admitted in NICU, while 30% of controls were admitted in NICU and this difference between cases and controls was significant with a p value of 0.003. Thus, more NICU admissions were from cases than the controls, which was in line with studies by Phoibe Uwzeyimana et al. (50.4%), and Jaicom Dagar et al. (27%).^(8,7)

Hyaline Membrane Disease (HMD):

In this study, 30% of neonates from the cases had HMD, whereas 23.3% of neonates from controls had HMD. It might be due to early termination of pregnancy in the case group to reduce perinatal morbidity and mortality. This finding of higher incidence of HMD in cases was in concordance with the finding of Peter H Gray et al. (58%).⁽⁹⁾

Meconium Aspiration Syndrome (MAS):

Of the total study population, 20% of cases and 16.7% of controls had MAS. Similar higher incidence of MAS in cases was reported by Phoibe Uwzeyimana et al. (17.4%).⁽⁸⁾

Hypoxic Ischemic Encephalopathy (HIE):

In this study, incidence of HIE was 11.7% in cases and in controls it was 6.7%. Similar finding was mentioned by Tiwari A et al. (6.3%) in their study.⁽⁶⁾

Intra Ventricular Haemorrhage (IVH):

In the present study, 6.7% of the cases had developed IVH and 1.7% of controls developed IVH, similar results were reported by Tiwari A et al. (14.6%).⁽⁶⁾

Hypoglycemia:

Of the total study population, hypoglycemia was present in 28.3% of cases, and 5% of controls, and the difference was statistically significant (p value 0.001). It showed that neonates born to mothers with hypertension were at risk for hypoglycaemia compared to their counter parts.

Necrotizing Enterocolitis (NEC):

In the present study, NEC was present in 48.3% of cases, and 10% of controls and the difference was statistically highly significant (p value 0.0001). From this it was concluded that neonates born to gestational hypertensive mothers were having a higher chance of NEC compared to the neonates born to normal mothers. Similar to this result, Forgive Avorgbedor et al. found that cases (17.5%) had higher incidence of NEC than the controls (13.7%).⁽¹⁰⁾

Sepsis:

Of the total study population, Sepsis was seen in 46.7% of cases, and 18.3% of controls, and a statistically significant (P value 0.001) difference was observed between cases and controls. From this it was found that neonates born to maternal hypertensive disease were more prone to sepsis.

Polycythemia:

Regarding distribution of hematological abnormalities, majority of polycythemic neonates were seen in cases (20%) than controls (3.3%). This finding was in concordance with the studies by Helen C. Okoye et al. (8%), and Shivhare K et al.^(11,12)

Thrombocytopenia:

In the present study, Thrombocytopenia was present in 30% of cases, and 3.3% of the controls. This finding of presence of more number of Thrombocytopenic neonates in cases was similar to studies by Jiom Dagar et al. (29%), Helen C. Okoye et al. (38%), Sandhya Shivakumar et al. (22%).^(7,13)

Neutropenia:

In the present study, Neutropenia was seen in 1.7% of cases, and 3.3% of controls, thus less number of the cases had reported neutropenia compared to controls. Study by Gray. P et al. also had similar results, showing less neutropenia among cases (21%) than controls (24%).⁽⁹⁾

Except neutropenia, remaining hematological parameters had shown a statistically significant (<0.001) difference between cases and controls.

CONCLUSION:

According to the present study, complications like pre term deliveries, IUGR, NICU admission, MAS, HMD, HIE, IVH, Hypoglycemia, NEC, Sepsis. Haematological abnormalities such as Polycythemia, and Thrombocytopenia were more common but Neutropenia was also noted as important haematological abnormality among the neonates born to gestational hypertensive mothers than neonates born to normotensive mothers. Hence, all the neonates born to pregnancy induced hypertensive mothers should be thoroughly screened for hematological parameters for better outcome.

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