



## ARE LOWERED BLOOD PLATELET COUNTS AN INDICATION OF HYPERTENSION AMONG PREGNANT WOMEN?

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**ABSTRACT** **Background:** Hypertensive disorders are most common medical complications of pregnancy, and are one of the major causes of maternal and fetal morbidity and mortality. Thrombocytopenia complicating hypertensive disorders of pregnancy are responsible for approximately 20% of all cases of thrombocytopenia during pregnancy. Our study was done to assess the utility of platelet count as a prognostic indicator in pregnancy induced.

**Method-** A followup study on 50 women with eclampsia and pre eclampsia along with a control group of 50 normal pregnant women with similar demographic features was undertaken over a period of nine months. Platelet assessment was done in every case and patients with documented platelet count of less than 1,50,000/cumm was acknowledged as thrombocytopenia.

**Result:** In the control group as there was no significant thrombocytopenia, the mean duration of pregnancy and maternal/fetal outcome was quite satisfactory with less operative intervention. Whereas in test group patients with significant thrombocytopenia the mean duration of pregnancy was reduced with higher incidences of poor outcome.

**Conclusion-** Our study and the results show that the assay of platelets can be considered as one of the prognostic tool in management of hypertensive disorders of pregnancy.

**KEYWORDS :** Pregnancy induced hypertension, Thrombocytopenia

### Introduction

Approximately 70% of hypertensive disorders are due to gestational hypertension, preeclampsia and eclampsia whereas other 30% are due to preexisting or undiagnosed hypertension. PIH still remains a disease of theories as its cause is not yet fully established. (1) Out of all the hematological changes that occur in pre-eclampsia and eclampsia thrombocytopenia is the most common hematological abnormality found (2). Thrombocytopenia is defined as subnormal number of platelets in the circulating blood. (3) Thrombocytopenia is an associated phenomenon of Pregnancy induced hypertension (PIH). Thrombocytopenia complicates 7-8% of all pregnancies. HELLP Syndrome (Hemolysis, Elevated liver enzyme, low platelet count) having platelet count <1 lacs/mm<sup>3</sup> shows poor fetal outcome. (4) It occurs in 2-12% women with severe pre-eclampsia or eclampsia (2). Early assessment of severity of PIH is necessary to prevent complications like HELLP syndrome and increased maternal and fetal morbidity and mortality.

### Aim

Our study was undertaken to assess the severity of PIH by assessing the blood platelet count as it is a rapid, cheaper method and can be used in routine monitoring.

### Material and method

We included 50 normal pregnant women and 50 pregnant women with varying degree of PIH. The preliminary data in regards to name, age, sex, registration number, obstetric, menstrual, and family history, general and systemic examination and investigations were recorded in a proforma after getting informed consent from the patients.

Pregnant females in the third trimester with symptoms and signs of pregnancy induced hypertension, admitted in Antenatal care ward were selected and grouped as per the criteria described in classification of hypertensive disorders of pregnancy according to the American College of Obstetricians and Gynaecologists. (5)

The study groups were divided as follows:

1. Healthy normotensive pregnant controls-50
2. Patients with preeclampsia-20
3. Patients with severe preeclampsia-20
4. Patients with eclampsia-10

### Preeclampsia(6) -

It is defined by hypertension (blood pressure greater than 140 mm Hg systolic or 90 mm Hg diastolic) associated with proteinuria > 0.3g/l in a 24hour urine collection or 1+ dipstick or greater in random urine

collection, after 20weeks of gestation in a previously normotensive women.

### Severe Preeclampsia(7)-

This condition was categorised if systolic blood pressure was >160 mm Hg and diastolic blood pressure > 110 mm Hg.

### Eclampsia(6) -

The onset of convulsions in women with pre-eclampsia that cannot be attributed to other causes is termed as eclampsia.

Hemoglobin estimation, platelet count was done by Automated Haematology analyser, Sysmex. The peripheral blood smear (PS) of the cases were also stained by Leishman's stain and were studied for their adequacy and morphology.

### Result

This study was performed with an aim to establish the importance of platelet count as the most consistent and reliable method in early detection of PIH cases and following results were observed.

**Table 1. Age wise distribution of control and cases**

Age Group(years)	Control	PE	Severe PE	Eclampsia
20-25	15	7	5	4
25-30	20	5	6	3
30-35	15	8	9	3

**Table 2. Parity wise distribution of controls and cases.**

In our study the average platelet count of controls is 2.14 lac/cmm while the average platelet counts of patients of mild pre eclampsia, severe pre eclampsia and eclampsia 1.90, 1.48 and 1.30 lac/cmm respectively. The platelet count in severe preeclampsia and eclampsia was significantly lower than in mild pre eclampsia and controls.

**Table 3. Correlation of platelet count with maternal outcome in control and cases**

Status	Primigravida	Multigravida	Total
Control	28	22	50
Mild PE	17	03	20
Severe PEclampsia	14	06	20
Eclampsia	04	06	10
Total	63	37	100

**Table 3. Correlation of platelet count with maternal outcome in control and cases**

Platelet Count	No. of cases	Unfavourable maternal outcome	Favourable maternal outcome
Normal	69	04	42
Thrombocytopenia	31	20	11

In the control group as there was no significant thrombocytopenia, the outcome of pregnancy was quite satisfactory with less operative intervention.

Thrombocytopenia was seen in total of 27cases of severe pre-eclampsia and eclampsia combined out of which 18 had unfavourable fetal outcome and 09 had poor maternal out

### Discussion

Pre eclampsia affects approximately 6% of all pregnancies. Thrombocytopenia complicating pregnancy is reported relatively frequently in severe pre eclampsia with occurrence ranging at 11 to 29%.(8,9)

There was no statistically significant correlation between age and thrombocytopenia in our study or in other studies.

Majority of the women in our test group were primigravidas and presented with thrombocytopenia, a fact studied and noted by others (Delmis . J etal)(10).

In present study, the platelet count was very significantly lower in severe preeclampsia ( $P<0.01$ ) and eclampsia ( $P<0.01$ ) than that in normal healthy pregnant controls. Whereas the platelet count in mild preeclampsia was not significantly lower than the healthy pregnant control. Our finding of a trend of lowering of platelet count with increasing severity of pregnancy induced hypertension is consistent with below mentioned studies.

**TABLE4:**

AUTHORS	CONTROL (lac/cmm)	Mild Pe	Severe Pe	Eclampsia
Srivastava(1995)(11)	1.94	1.79	1.64	1.52
Jambhulkar et al(2001)(12)	2.38	2.30	1.70	1.51
Joshi et al(2004)(13)	2.2	2.0	1.40	1.30
J Davis et al(2007)(14)	2.57	2.30	1.77	-
Ellora Devi (2012)(15)	2.44	1.82	1.42	-
Present study	2.14	1.90	1.48	1.30

In our study there was poor outcome in test group as when compared to the control group in patients with thrombocytopenia due to deteriorating maternal condition.

### Conclusion

Thrombocytopenia in hypertensive disorders of pregnancy carries a definite risk to the mother and fetus. The platelet count has an association at prediction of increasing grade of PIH. There is an inverse relationship between the severity of PIH and platelet count

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