

# Prognostic significance of platelet count in Pregnancy Induced Hypertension

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## ABSTRACT:

**Background:** *Pregnancy Induced Hypertension (PIH) is one of the serious complications during pregnancy causing maternal and fetal morbidity and mortality. Early assessment of its severity is very important to prevent further complications.*

**Aims and Objectives:** *to evaluate the importance of Platelet count as a prognostic indicator for early assessment of severity of the PIH.*

**Material and Methods:** *The present study was done on 180 pregnant women who were divided into control group and study group. Study group included 90 pregnant women with varying degree of PIH and was further divided into three groups, depending on the severity of PIH. 30 cases of gestational hypertension, 30 cases of preeclampsia and 30 cases of eclampsia. 90 healthy pregnant women with same gestational age were included in the study as the control group. Blood samples were collected and analyzed by automated hematology analyzer. The platelet counts were done and compared by appropriate statistical analysis.*

**Results and Interpretation:** *The platelet counts were lower in pre-eclampsia and eclampsia as compared to control group ( $p < 0.01$ ).*

**Conclusion:** *We found a relationship between platelet count and severity of PIH. The platelet count can be considered as an early indicator in the assessment of severity of PIH.*

**Keywords:** *Platelet count, Pregnancy Induced Hypertension, Preeclampsia, Eclampsia, Severity*

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## INTRODUCTION

Complications during pregnancy are of a major concern as they affects both mother and her baby. Hypertensive disorder of pregnancy is one such condition which complicates about 8% pregnancies.<sup>1</sup> PIH is responsible for 14% of maternal deaths in the world<sup>2</sup>. PIH is increased blood pressure after twenty weeks of pregnancy in a women who was normotensive.

Clinically there is appearance of edema. PIH may further develop to severe forms Pre-eclampsia and Eclampsia.<sup>3</sup> Preeclampsia is gestational hypertension along with proteinuria. Eclampsia: preeclampsia with convulsions.<sup>4</sup> Thrombocytopenia is very common hematological change in pre-eclampsia and eclampsia<sup>5</sup> It is observed that hypertensive disorders of pregnancies contributes to 21% of pregnancies with thrombocytopenia.<sup>6</sup>

For proper intervention and prevention of further complications of PIH early assessment about

its progress and severity should be known but it's difficult as its pathophysiology is not clear<sup>7</sup>. So the present study was conducted to evaluate the prognostic significance of Platelet count to predict the progress and severity of the PIH.

## MATERIALS AND METHODS

Study included 180 pregnant women after obtaining the consent. This is approved by Ethical Committee.

**Inclusion Criteria:** Cases, admitted in wards of OBGY Dept. were selected with the help of obstetrician. Cases were divided into Control Group: It consisted of 90 cases. All were normal healthy 2<sup>nd</sup> and 3<sup>rd</sup> trimester pregnant women. Study Group: It consisted of 90 cases with Pregnancy Induced Hypertension. This group was again subdivided as follows: Mild PIH / Gestational Hypertension - 30 cases, Pre-eclampsia - 30 cases, Eclampsia-30cases.

**Exclusion Criteria:** Cases with chronic disorders and those on drugs and all other factors that could affect the platelet count were excluded from study. Blood pressure was measured by sphygmomanometer with the woman in semi-reclining position. Standard adult sized cuff was used. From each patient 2ml of venous blood was collected with disposable sterile syringe and needle after all aseptic precautions. The

blood was collected from the antecubital vein and delivered into a siliconised tube containing dried EDTA. Automated method using automated hematology analyzer - BECKMAN COULTER was

used for counting platelets. Calibration of instrument was done as recommended by International Committee for Standardization in Hematology.

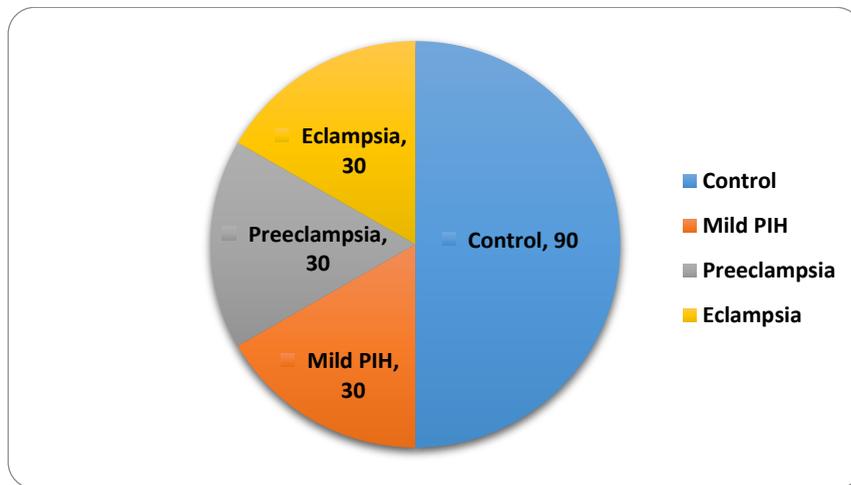


Fig. 1: Group-wise distribution of the cases under study.

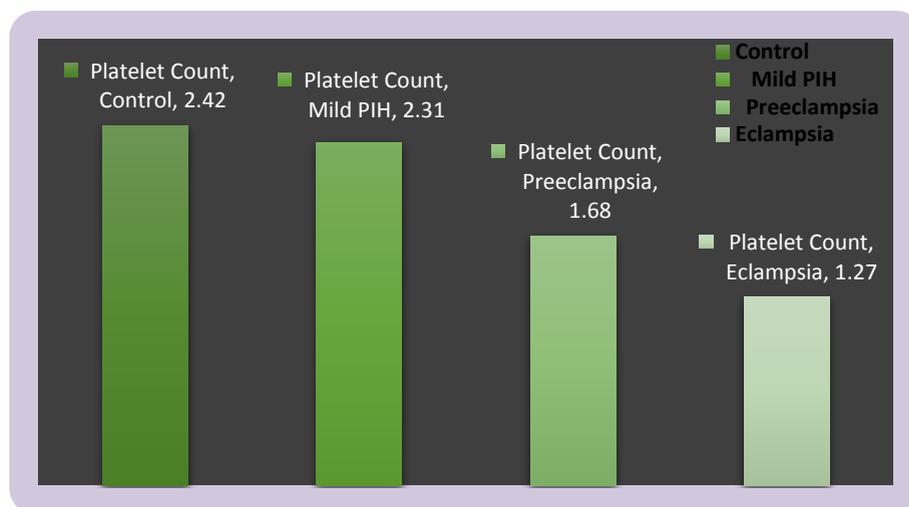


Fig 2: Group- wise distribution of Mean values for Platelet Count

Table 1: Comparison of Mean and SD values for Platelet count between Control Group and PIH - Mild PIH, Preeclampsia, Eclampsia.

CONTROL 2.42 ± 0.54	Mild PIH 2.31 ± 0.58	t-value 0.90	p>0.05	Not Significant
CONTROL 2.42 ± 0.54	Pre-eclampsia 1.68 ± 0.72	t-value 5.03	P< 0.01	Highly Significant
CONTROL 2.42 ± 0.54	Eclampsia 1.27 ± 0.62	t-value 8.83	P< 0.01	Highly Significant

Table 2: Comparison of Mean and SD values for Platelet count between PIH groups- Mild PIH, Preeclampsia, Eclampsia

Mild PIH 2.31 ± 0.58	Pre-eclampsia 1.68 ± 0.72	t-value 3.62	P<0.01	Highly Significant
Mild PIH 2.31 ± 0.58	Eclampsia 1.27 ± 0.62	t-value 6.54	P< 0.01	Highly Significant
Pre-eclampsia 1.68 ± 0.72	Eclampsia 1.27 ± 0.62	t-value 2.33	P< 0.05	Significant

## DISCUSSION

On observation low platelet count was significant among women with pre-eclampsia and eclampsia group when compared with control group. Total 180 pregnant women were assessed to establish the relationship between platelet count and severity of PIH and were grouped as shown in Fig 1

Decrease in Platelet count was observed among women in Mild PIH, Preeclampsia and Eclampsia as compared to control. Decrease in platelet count was directly proportional to severity of PIH as shown in Fig.2.

Degree of thrombocytopenia present was directly related to severity of the disease process. Hence a positive correlation was established between thrombocytopenia and severity of PIH. Extensive research work on understanding the pathophysiology of PIH suggest a change in prostaglandins metabolism at placental and extra placental tissue.<sup>8-13</sup> There is inadequate amount of maternal blood to the placenta and fetus which affects placentation and the uteroplacental vasculature developing placental ischemia.<sup>14</sup> Placental ischemia is thought to activate maternal vascular endothelium leading to higher sensitivity to angiotensin II, with increased thromboxane, and endothelin, There is decrease in vasodilators like nitric oxide and prostacyclin. All these and many undefined factors responsible for characteristics of PIH like hypertension, systemic endothelial dysfunction and platelet activation<sup>15-18</sup>. There is activation of the hemostatic system which further activates platelets<sup>19,20</sup>. The prognostic value of platelet count in PIH in our study correlated well after comparison with some studies<sup>21,22</sup>.

## CONCLUSION

To conclude, in the present study, a positive correlation was observed between low platelet count and severity of PIH. It is of a great help to investigate the PIH cases for platelet count and with its interpretation try to assess the severity as early as possible to prevent the complications of PIH and consequent maternal and fetal morbidity and mortality.

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## RESULTS

Results indicate that the platelet count had significantly decreased in pre-eclampsia and eclampsia as compared to platelet count in Control and mild PIH as shown in Table No 1 and 2.

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