



## A study on the prevalence of PIH and its relation with Platelet count.

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### ABSTRACT

Pregnancy induced hypertension is one of the most common and potentially life threatening complications of pregnancy. It affects 5-8% of all pregnancies and is one of the leading causes of high morbidity for both mother and fetus, especially in developing countries.

The present study was conducted in 92 pregnant women in department of Physiology, Tezpur Medical college (Casualty), over a period of 6 months. Blood pressure was measured in all the patients and venous blood sample was collected for platelet count from those who were detected to have PIH.

The prevalence of PIH was found to be 80.43%. Mean $\pm$ SD of SBP, DBP & Platelet count was 167.50 $\pm$ 27.18, 116.46 $\pm$ 27.17 and 2.00 $\pm$ 0.30 respectively.

Pearsons correlation coefficient of SBP with Platelet count was -0.99768 and p value was .0001. Pearsons correlation coefficient of DBP with Platelet count was -0.99751 and p value was .0001.

### Summary:

In this study it was observed that PIH is significantly associated with the low platelet count.

### KEYWORDS : PIH, SBP, DBP.

### Introduction:

Pregnancy induced hypertension is one of the most common and potentially life threatening complications of pregnancy. It affects 5-8% of all pregnancies and is one of the leading causes of high morbidity for both mother and fetus, especially in developing countries (1). PIH is the development of hypertension in the second half of pregnancy on two or more occasions, about four hours apart, in a woman who previously been normotensive, and in whom blood pressure returns to normal within six weeks of delivery. PIH is essentially a disease of primigravida and is more common in the age group 20 to 35 years. PIH without intervention can lead to eclampsia, which is characterized by hypertension, proteinuria, oedema and epileptiform convulsions requiring emergency caesarean section. (2,3). The mother may develop disseminated intravascular coagulation, acute renal failure, stroke (ischaemia due to vasospasm and microthrombosis or even haemorrhage due to severe thrombocytopenia), acute pulmonary oedema, cerebral oedema, placental abruption, liver haemorrhage/rupture or even maternal death (4). The fetal sufferance seems to be due exclusively to placental insufficiency and may include : pregnancy loss, fetal death in utero, intrauterine growth retardation and premature labour (5). In long term, a woman with a history of preeclampsia has a chance to repeat it in future pregnancy (6) with a high cardiovascular risk (5,6). The rate of dying by ischaemic cardiovascular disease also increases by 2.5 (7). PIH (Blood pressure >140/90 mm Hg) occur before or after 20 weeks of gestation without proteinuria. The clinical manifestations of preeclampsia are hypertension, proteinuria with or without coexisting systemic abnormalities involving kidney, liver or blood. HELLP syndrome is a severe form of preeclampsia and involves hemolytic anemia, elevated liver function tests and low platelet count(8). There is paucity of data regarding the effect of pregnancy induced hypertension on the platelet count in the north-east part of the country. Therefore this study was carried out to investigate the effect of pregnancy induced hypertension on platelet count. Thus the present study was designed with the following objectives.

### Aims and objectives:

1. To find out the prevalence of PIH.

2. To determine the relationship between PIH and total platelet count.

### Materials and methods:

The present study was undertaken in the department of Physiology, Tezpur Medical College over a period of 6 months. Total 92 pregnant women were evaluated for the study.

Women who were previously normotensive but presented with a BP>140/90 mm Hg during pregnancy and presented in casualty were considered to have PIH.

After taking informed written consent from each subject detailed history was recorded regarding gravida, parity, history of diabetes mellitus, hypertension and other obstetrics and gynaecological complications.

Complete clinical examination was done at the starting of experiment. The anthropometric parameters like height and weight of subject were measured.

Blood pressure was recorded in standing, sitting and lying down positions and the average was calculated.

Blood samples were collected from all PIH patients and platelet count was determined by automated analyzer.

### Exclusion criteria:

Women with previous history of hypertension, diabetes mellitus, history of recurrent miscarriages, previous hepatic or renal disease, idiopathic thrombocytopenic purpura (ITP) or any other bleeding diathesis, immunosuppressant or history of illicit drug use were excluded from the study.

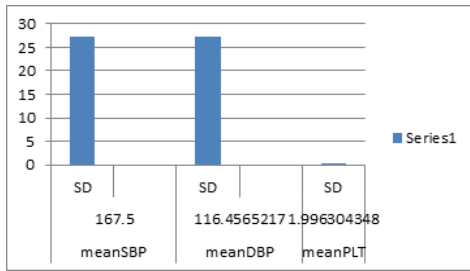
### Statistical analysis:

Data were expressed in Mean $\pm$ SD and were analysed in Microsoft excel and SPSS 16. Prevalence was measured in percentage. Pearson's correlation coefficient and p value were calculated.

**Results and observations:**

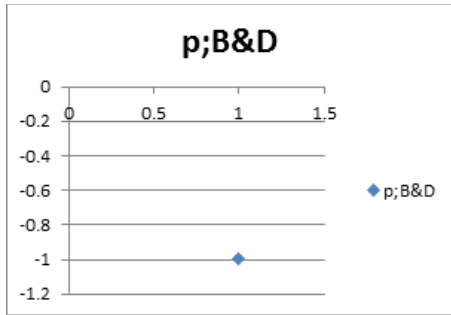
PIH was detected in 74 out of 92 patients and the prevalence of PIH was found to be 80.43%.

**Figure 1: Mean±SD of SBP, DBP and Platelet**

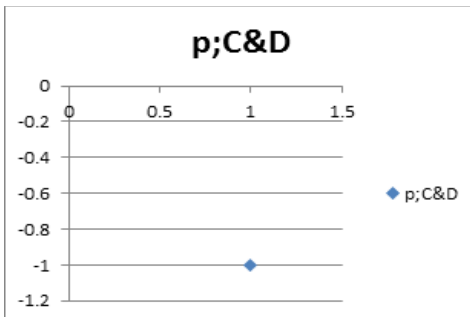


Mean±SD of SBP was 167.50±27.18, Mean±SD of DBP was 116.46±27.17 and Mean±SD of platelet count was 2.00±0.30.

**Figure 2: Pearsons correlation coefficient of SBP with platelet count**



**Figure 3: Pearsons correlation coefficient of DBP with platelet count**



Pearsons correlation coefficient of SBP with Platelet count was -0.99768 and p value was <0.0001. Pearsons correlation coefficient of DBP with Platelet count was -0.99751 and p value was <0.0001.

**Discussion:**

74 out of total 92 pregnant women were found to develop PIH. Prevalence of PIH was 80.43%. Similar findings were documented in various studies (7-9).

Mean±SD of SBP was 167.50±27.18, Mean±SD of DBP was 116.46±27.17 and Mean±SD of platelet count was 2.00±0.30.

Pearson's correlation coefficient of SBP with Platelet count was -0.99768 and p value was found to be <0.0001. Pearson's correlation coefficient of DBP with Platelet count was -0.99751 and p value was found to be <0.0001.

Platelet count was found to decrease with increase in both SBP and DBP which was statistically highly significant.

Our finding is consistent with the findings from a previous study which observed a low platelet count among PIH patients.(9)

The present study documents significant reduction of platelet count with increase in the level of blood pressure. The etiology and pathogenesis of PIH remains poorly understood. It is however often characterized by suboptimal uteroplacental perfusion associated with a maternal inflammatory response and maternal vascular endothelial dysfunction and platelet count falling below 100×10<sup>9</sup>/L (10).

Similar findings were documented in various studies. The low platelet level was attributed to immunologically mediated destruction, platelet aggregation and consumption increased level of fibrin degradation products (FDP) were due to reduced synthesis of coagulation factors due to liver dysfunction (11-14).

Thrombocytopenia is reported frequently in preeclampsia and pregnancy induced hypertension which has also been reported in several studies. There is progressive fall in mean platelet count with increasing severity of the disease (15,16).

Platelet activation may lead to increased generation of thromboxane A2 and serotonin release, in turn increase vasoconstriction and platelet aggregation.

Jambhulkar S et.al.documented that platelet count and partial thromboplastin time have predictive value in detecting disseminated intravascular coagulation (DIC) in preeclampsia and these parameters show more abnormal results with increasing severity of preeclampsia (17).

**Conclusion:**

In this study it was observed that pregnancy induced hypertension PIH is significantly associated with the low platelet count. Thus total platelet count estimation can be taken as an early and rapid procedure for screening preeclampsia cases at admission followed by serial platelet count while monitoring other coagulation indices. An ongoing coagulopathy can be suspected if thrombocytopenia along with prolongation of PT and aPTT is found and treatment should be started immediately. However more research is required in this field to find an ideal screening method for early identification of preeclampsia and prediction of its severity. This would open up new possibilities for early diagnosis and effective treatment of preeclampsia and thereby saving a number of pregnant women in future.

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