

# Association of Thrombocytopenia with Pregnancy Induced Hypertension

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## ABSTRACT

**Objective:** To find the association of thrombocytopenia with pregnancy induced hypertension in females presenting in tertiary care hospital

**Methodology:** This case series enrolled 100 females, the age of the participants was between 18-40 years, singleton pregnancy, and gestational age >34 weeks. Two groups Cases and Controls were formed, cases group included all females with PIH (maternal platelet count <15000cell/m<sup>3</sup> in serum during third trimester and controls cases were those without PIH (normal BP<140/90mmHg). Blood samples taken from the patients were evaluated through hospital lab and platelet counts were recorded and if the platelet count was low, then thrombocytopenia was labeled.

**Results:** Age of the patients was evaluated and found majority of the cases i.e. 60% in cases and 66% in control in 18-30 yrs of age, the association of thrombocytopenia with pregnancy induced hypertension in females presenting in tertiary care hospital shows that 24%(n=12) in cases and 8%(n=4) in controls had thrombocytopenia whereas 81.67%(n=49) in cases and 95%(n=57) in controls had no thrombocytopenia, O.R was calculated as 3.63 whereas p value was 0.0368.

**Conclusion:** The result of this study reveal that thrombocytopenia is associated with pregnancy induced hypertension in females presenting in tertiary care hospital

**Keywords:** Gestational thrombocytopenia, pregnancy induced hypertension, association

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## INTRODUCTION

Pregnancy is known a physiological condition however it may also be hypertension induced (known as pregnancy induced hypertension, PIH) in normotensive females/aggravated-existing hypertension. Pregnancy may be complicated due to hypertension and leads to adverse outcome.<sup>1</sup> Around 10 to 17% of pregnancies are found with this complication. In sub-continent its incidence varies from 5 to 15%.<sup>2</sup>

Currently, there is no diagnostic modality available which may forecast for development of PIH and its severity.<sup>3</sup> Intravascular coagulation in pregnancy is indicated due to abnormalities in coagulation parameters in females with hypertensive disorder during gestational period. Thrombocytopenia and pre-eclampsia(PE) is found as the common hematological abnormality in hematological changes in pregnancy.<sup>4</sup>

The existence of thrombocytopenia is also considered due to diverse etiologies in pregnancy. The awareness and availability of proper facilities may help in proper diagnosis and management of this morbidity.<sup>5</sup> Gestational thrombocytopenia is a common etiology of thrombocytopenia (>75%), and needs no explanation and treatment; it is commonly diagnosed in 3<sup>rd</sup> trimester of pregnancy and after delivery it corrects spontaneously.<sup>6-8</sup>

In a study conducted in India in 2014, reported that frequency of thrombocytopenia was 17.5% in females with PIH and 0% in normal pregnant females or controls. The difference was highly significant (p<0.05).<sup>9</sup> In a local study conducted in Peshawar in 2012 reported that frequency of thrombocytopenia was 21.8% in females with PIH and 4.4% in normal pregnant females or controls. The difference was highly significant (P<0.5)<sup>10</sup>

Rationale of this study is to assess the association of thrombocytopenia with pregnancy induced hypertension in females presenting in a tertiary care hospital. There are only few studies which have been done in this regard. Studies are available which measures the platelet count of PIH females but no signifies the thrombocytopenia as risk factor of PIH. So, we plan to conduct this study so that in future we can be able to implement the results of this study and can recommend to screen females on early stages for thrombocytopenia and through early intervention PIH can be prevented and females can be prevented for adverse obstetric outcome. This will help to improve our practice and current knowledge.

## METHODOLOGY

This case control study was conducted, the age of the participants was between 18-40 years, singleton pregnancy, and gestational age >34 weeks. The exclusion criteria was anemic (Hb<8gm/dl) required blood transfusion or intervention, diagnosed gestational or chronic diabetes (BSR>186mg/dl), pre-pregnancy hypertension (bp≥140/90mmHg) and are on anti-hypertensive medicine, very lean females (BMI<18g.m<sup>2</sup>) and those with some previously diagnosed autoimmune disorder. Two groups Cases and Controls were formed, cases group included all females with PIH(maternal platelet count <15000cell/m<sup>3</sup> in serum during third trimester and controls cases were those without PIH (normal BP<140/90mmHg). We obtained a sample of 2 cc blood from the patients with the help of syringe (BD) and sent to the hospital lab for evaluation of platelet count and if found <15000cell/m<sup>3</sup> it will be considered as thrombocytopenia. Odds ratio was calculated to measure the association between thrombocytopenia and PIH. OR>1 was taken as risk for

association. P value  $\leq 0.05$  was taken as significant, this analysis was done with the help of SPSS (Version 20)

**RESULTS**

Majority of our cases controls and study group were found in range of 18 to 30 years, as detailed in table. (Table No. 1)

Association of thrombocytopenia with pregnancy induced hypertension in females presenting in tertiary care hospital shows that 24%(n=12) in cases and 8%(n=4) in controls had thrombocytopenia whereas 81.67%(n=49) in cases and 95%(n=57) in controls had no thrombocytopenia, O.R was calculated as 3.63 whereas p value was 0.0368. (Table No. 2)

Table 1: Age Distribution (n=100)

Age (in years)	Cases(n=50)		Control(n=50)	
	No. of patients	%	No. of patients	%
18-30	30	60	33	66
31-40	20	40	17	34
Total	50	100	50	100

Table 2: Association of Thrombocytopenia with Pregnancy Induced Hypertension (n=100)

Association of thrombocytopenia	Cases(n=50)		Control(n=50)	
	No. of patients	%	No. of patients	%
Yes	12	24	4	8
No	38	76	46	92
Total	50	100	50	100

Odds ratio 3.63  
 z statistic 2.088  
 Significance level: P = 0.0368

**DISCUSSION**

We planned this study to assess the association of thrombocytopenia with pregnancy induced hypertension in females presenting in a tertiary care hospital, as there are only few studies which have been done in this regard. Studies are available which measures the platelet count of PIH females but no signifies the thrombocytopenia as risk factor of PIH.

Majority of cases in both groups were between 18 to 30 yrs, the association of thrombocytopenia with pregnancy induced hypertension in females presenting in tertiary care hospital shows that 24%(n=12) in cases and 8%(n=4) in controls had thrombocytopenia whereas 81.67%(n=49) in cases and 95%(n=57) in controls had no thrombocytopenia, O.R was calculated as 3.63 whereas p value was 0.0368.

Thrombocytopenia is found in 10% of the cases. The Gestational thrombocytopenia is a common etiology of thrombocytopenia (>75%), and needs no explanation and treatment; it is commonly diagnosed in 3<sup>rd</sup> trimester of pregnancy and after delivery it corrects spontaneously.<sup>6-8</sup>

In a study conducted in India in 2014, reported that frequency of thrombocytopenia was 17.5% in females with PIH and 0% in normal pregnant females or controls. The difference was highly significant (p<0.05).<sup>9</sup> In a local study conducted in Peshawar in 2012 reported that frequency of thrombocytopenia was 21.8% in females with PIH and

4.4% in normal pregnant females or controls. The difference was highly significant (P<0.5).<sup>10</sup> The findings of our study are in agreement with this local study.<sup>10</sup>

Another study<sup>11</sup> estimated the incidence of thrombocytopenia in pregnant women diagnosed with PIH and to correlate the severity of PIH with the degree of thrombocytopenia, the recorded that preeclampsia - mild (56%) and severe (36%), accounted for most of the cases followed by eclampsia (6%) and gestational HTN (2%). In the 100 cases, mild thrombocytopenia (41%), moderate thrombocytopenia (29%), severe thrombocytopenia (6%), and normal platelet counts (24%) were encountered. Varying platelet levels were seen in the five groups with 23.4% of severe eclampsia and 50% of eclampsia cases having normal platelet counts and 7.1% of mild preeclampsia cases showing severe thrombocytopenia. Poor maternal outcome was seen 11% cases due to HELLP syndrome, postpartum hemorrhage, and maternal death. Poor fetal outcome was seen in 18% cases due to intrauterine growth restriction and perinatal mortality. They concluded that the severity of PIH cannot be relied upon through platelet count. However, they did not include a control group to record the association of thrombocytopenia with PIH as in our study.

Meshrametal and others<sup>12</sup> found lower platelet count in pre-eclamptic and eclamptic females than those in healthy pregnancy. They found 29.31% cases with low platelet count in those with pre-eclampsia and 44.4% in eclamptic females. Another study conducted locally by Khan A and colleagues recorded a decline in platelet count in those with PIH and found similar findings in Indian study.<sup>13</sup>

Assessment of thrombocytopenia through platelet count is rapid, low cost, simple and routine screening test. Authors have varied point of view regarding severity of PIH. The results of our study reveal that we can be able to implement the results of this study and can recommend to screen females on early stages for thrombocytopenia and through early intervention PIH can be prevented and females can be prevented for adverse obstetric outcome. This is helpful to improve our practice and current knowledge.

**CONCLUSION**

The result of this study reveal that thrombocytopenia is associated with pregnancy induced hypertension in females presenting in tertiary care hospital

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