Study of role of thrombocytopenia in predicting the severity of preeclampsia

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Abstract
Introduction: Preeclampsia thrombocytopenia (PIH) is defined as hypertension (HTN) that occurs in pregnancy for the first time after 20 weeks of gestation, disappearing following delivery of the baby. PIH is the most common medical disorder of pregnancy that leads to a complicated multi-organ failure in the mother. It is one of the most common causes of both maternal and neonatal morbidity. It is a global problem and complicates approximately 10-17% of pregnancies. The incidence of PIH in India ranges from 5% to 15%. Hemorrhage occupies is an important factor in the etiology of maternal mortality and therefore, remains a major problem **Aims and Objectives:** To study of Role of Thrombocytopenia in Predicting the Severity of Preeclampsia **Methodology:** It was case control study 192 cases of preeclampsia and eclampsia and 90 controls all the patients who given consent were included into the study. **Result:** the severity of the preeclampsia and eclampsia increases the there is significantly decrease in the platelet count while there is decrease in hemoglobin count is there but it is not statistically significant, similiarly there is increase in BT and CT but it is not statistically significant (p<0.05) There is significant association between decrease in platelet count and unfavorable maternal outcome (χ^2 = 48.106, p<0.05.). It is clear that there is significant association between decrease in platelet count and unfavorable Fetal Outcome (χ^2 = 10.47, p<0.05) **Conclusion:** Thrombocytopenia can be used as Predictor the Severity of Preeclampsia and eclampsia and maternal and fetal out comes
Keywords: Preeclampsia, Eclampsia, Thrombocytopenia.

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INTRODUCTION

Preeclampsia thrombocytopenia (PIH) is defined as hypertension (HTN) that occurs in pregnancy for the first time after 20 weeks of gestation, disappearing following delivery of the baby.[1] PIH is the most common medical disorder of pregnancy that leads to a complicated multi-organ failure in the mother. It is one of the most common causes of both maternal and neonatal morbidity.[2] It is a global problem and complicates approximately 10-17% of pregnancies. The incidence of PIH in India ranges from 5% to 15%.[3] Hemorrhage occupies is an important factor in the etiology of maternal mortality and therefore, remains a major problem.[4] Currently, there is no screening test that would help in identifying which pregnancy will be associated with PIH or assess its severity.[5] A variety of hematological abnormalities may occur in women with PIH[6] of which thrombocytopenia is the most common.[5,7,8] Some investigators have proposed biochemical markers to predict the severity of PIH like Placental tissue protein 13 and Endoglin's; but these tests cannot be used for simple, low-cost screening. Therefore, there is a need to identify a simple test specifically designed for routine use in a hospital environment[9] in particular those suitable at a rural setup. It is observed that preeclamptic mother having coagulation indices in severely abnormal ranges were associated with substantial maternal and fetal jeopardy.[10,11] early assessment of severity of pre-eclampsia and eclampsia is necessary to prevent complications like HELLP syndrome and increased maternal and fetal morbidity and mortality. Hence, this study is undertaken to assess the

severity of pre-eclampsia, eclampsia and coagulopathy by estimation of platelet count, that is a simple, rapid, cheaper and easily available prognostic lab method, so as to prevent further complications and help in better outcomes of motherhood. This study was done to estimate the incidence of thrombocytopenia in pregnant women diagnosed with PIH and to correlate the severity of PIH with the degree of thrombocytopenia.

RESULT

Table 1: Distribution of the Preeclampsia patients as per the Platelet count

Tests	Control (n=90)	Mild PE (n=110)	Severe PE (n=50)	Eclampsia (n=32)	P value
Mean Hb (gm%)	10.05	9.08	9.05	8.85	P>0.05
Platelet count (lac/cmm)	2.52±0.62	2.40±0.61	1.50±0.51	1.35±0.68	P<0.05*
Thrombocytopenia Cases	-	2 (1.89%)	17 (29.31%)	16 (44.44%)	-
BT (min)	2.43±0.21	2.45±0.29	2.66±1.35	2.70±1.44	P.>.05
Prolonged BT cases	-	-	4(6.89%)	3 (8.33%)	-
CT (min)	5.28±0.91	5.49±1.06	5.60±1.06	5.65±1.18	P>0.05
Prolonged CT cases	-	-	4 (6.89%)	3 (8.33%)	

From Table 1: it is it is clear that as the severity of the preeclampsia and eclampsia increases the there is significantly decrease in the platelet count while there is decrease in hemoglobin count is there but it is not statistically significant, similarly there is increase in BT and CT but it is not statistically significant.

Table 2: Distributionof platelet count with maternal outcome in cases of severe preeclampsia and eclampsia combined.

Platelet count	Unfavorable Maternal Outcome	Favorable maternal Outcome	Total
Normal	7 (10.50%)	63 (90.50%)	70
Thrombocytopenic	24 (80.79%)	6 (20.21%)	30

χ^2 = 48.106, p<0.05.

From Table2: There is significant association between decrease in platelet count and unfavorable maternal outcome

Table 3: Distribution of platelet count with fetal outcome in cases of severe preeclampsia and eclampsia combined.

Platelet count	Unfavourable Fetal out come	Favourable Fetal Outcome	Total
Normal	20 (28.57%)	50 (71.43%)	70
Thrombocytop nic	24 (80.00%)	6 (20.00%)	30

χ^2 = 10.47, p<0.05.

From Table 3: It is clear that There is significant association between decrease in platelet count and unfavorable Fetal Outcome.

DISCUSSION

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. This could be because f the reason that the as severity of preeclampsia and eclampsia increases there is decrease in platelet counts may be because of HELP syndrome so vice versa can be accepted i.e. decrease in platelet count is predictor of complications of pregnancy induced hypertension .Our finding of a trend of lowering of platelet count with increasing severity of pregnancy induced hypertension is consistent with Srivastava (1995)[9], Jambhulkar (2001)[10], Joshi *et al* (2004)[11], J.Davies *et al* (2007)[12] and Ellora Devi *et al* (2012)[13]. L. A. Norris (1993)[14] found association between platelet activation and intrauterine growth retardation. Leduc *et al* (1992)[15]reported significant association between thrombocytopenia and maternal complications and reported that platelet nadir is the best predictor of maternal outcome. Savita *et al* (2009)[16] reported higher incidence of neonatal complications in patients with preeclampsia and thrombocytopenia. Our findings regarding the relation of the deranged coagulation profile and maternal and fetal outcome are consistent with all the studies mentioned above. This could be beacause that as severity of preeclampsia increases the placental circulation also compromises may be responsible for intrauterine growth retardation.

REFERENCES

1. Mohapatra S, Pradhan BB, Satpathy UK, Mohanty A, Pattnaik JR. Platelet estimation: Its prognostic value
2. Sivakumar S, Bhat BV, Badhe BA. Effect of pregnancyinduced hypertension on mothers and their babies. Indian J Pediatr 2007; 74:623-5.
3. Anand S, Kirshnanand. Perinatal outcome in growthretarded babies born to normotensive and

hypertensive mothers: A prospective study. People's J Sci Res 2012; 5:24-8.

4. Agarwal S, Buradkar S. Coagulation studies in toxemia of pregnancy. J ObstetGynaecol India. 1978; 27:992-6.

5. Meshram DP, Chavan YH, Kadam PN, Panchal MG, Ramteke DJ. Maternal and foetal outcomes in pregnancy induced hypertension - A hospital based study. Int J Pharm Sci Invention 2014; 3:23-6.

6. Leduc L, Wheeler JM, Kirshon B, Mitchell P, Cotton DB. Coagulation profile in severe preeclampsia.ObstetGynecol 1992; 79:14-8.

7. Chauhan P, Rawat U, Bisht V, Purohit RC. Comparison of coagulation profile in pre-eclamptic and eclamptic patients with normotensive pregnant patients. J Evol Med Dent Sci 2014; 3:3208-15.

8. Veena HC, Manjunatha S, Itagi V, Taklikar RH, Patil RS. The hemostatic mechanisms in PIH. Indian J Appl Basic Med Sci 2015; 17:40-4.

9. Srivastava M; Bali S; Pandey J; Nayar V; Talib VH; Pregnancy induced hypertension and antithrombin III. Indian J PatholMicrobiol 1995 Jul; 38(3):257-60.

10. Jambhulkar S, Shrikhande A, Shrivastava R, Deshmukh K. Coagulation profile in pregnancy induced hypertension. Indian Journal of Hematology and blood transfusion, 2001Mar; 19(1):3-5.

11. Joshi *et al* Platelet estimation: its prognostic value in pregnancy induced hypertension. Indian J PhysiolPharmacol 2004; 2): 160–164

12. J.Davies, Fernando, Hallworth; Hemostatic Function in Healthy Pregnant and pre- eclamptic women: An assessment using the platelet function analyser (PFA-100) and thromboelastograph; International Anesthesia Research Society; vol.104, no.2, February 2007.

13. DrEllora Devi; Combination Of Platelet and Uric Acid Estimation Can Predict Severity Of Pih Better; Int J Pharm Bio Sci 2012 July; 3(3): (B) 1039 – 1045

14. L.A.Norris, B.L. Sheppard, G. Burke, J. Bonnar. Platelet activation in normotensive and hypertensive pregnancies complicated by intrauterine growth retardation, Internationaljournal of obstetrics and gynaecology, 1993; vol 101(3); 209-214.

15. Leduc L, Wheeler JM, Krishan B, Mitchell P, Cotton DB. Coagulation Profile in Sever preeclampsia. ObsGyn . 79 (1): 14-18, 1992.

16. Savita Rani Singhal,Deepika,Anshu,Smiti Nanda; Maternal and Perinatal Outcome in Severe Pre-eclampsia and Eclampsia JSAFOG; september-december 2009;1(3):25-28.