

A Study of Platelet Indices in PIH

Dr Indira S Bangera

Associate Professor, Department of Pathology, Father Muller Medical College, Mangalore, India

Abstract: *Pregnancy Induced Hypertension (PIH) is defined as BP more than 140/100 that occurs in pregnancy for the first time after 20 weeks of gestation without any prior hypertension history and may or may not disappears following delivery. It is also known to recur in the following pregnancy. Pregnancy induced hypertension includes gestational hypertension, pre - eclampsia, and eclampsia. It occurs in approximately 10 to 30% of pregnancies in Indian population. This study was conducted in Father Muller Medical College. This study was conducted from May 2011 to April 2014. Sixty PIH confirmed cases were taken up for this study and thirty normal patients were taken as control. In the sixty cases thirty patients belonged to Pre – eclampsia and thirty were diagnosed to have eclampsia. In the present study the mean age of the population was 31.26 years in Group 1, 29.26 years in group 2 and 24.35 years in group 3. In the present study the mean platelet count of the population in group 1 was 1.36 Lakhs / mm³, in Group 2 it was found to be 1.12 Lakhs / mm³ and 2.62 Lakhs / mm³ in group 3. In the present study the mean platelet volume of the population in group 1 was 9.1, in Group 2 it was found to be 8.05 and 11.1 in group 3. In the present study the mean platelet volume of the population in group 1 was 14.7, in Group 2 it was found to be 16.2 and 11.06 in group 3. When compared with the normotensive pregnant females, in the eclampsia and pre eclampsia pregnant females there are definite variations in the Platelet values and indices.*

Keywords: Platelet Indices, Pregnancy Induced Hypertension, Eclampsia, Pre – Eclampsia

1. Introduction

Pregnancy Induced Hypertension (PIH) is defined as BP more than 140/100 that occurs in pregnancy for the first time after 20 weeks of gestation without any prior hypertension history and may or may not disappears following delivery. It is also known to recur in the following pregnancy. Pregnancy induced hypertension includes gestational hypertension, pre - eclampsia, and eclampsia. It occurs in approximately 10 to 30% of pregnancies in Indian population. In PIH, lower the platelet count, greater are maternal and fetal morbidity and mortality. Recent studies suggest that platelet parameters like platelet indices are most simple and cost effective methods for prediction of PIH, way before the appearance of derangements in PT, APTT, TT values.^{1,2} So we undertook this study to see that if there is any variation in platelet count and indices like MPV & PDW in pregnancy induced hypertension. The maternity mortality and the fetal mortality increases exponentially with decrease in the platelet values and indices. This study puts in a sincere effort to find the same and thus help the practicing Physicians to give appropriate treatment at crucial time.

2. Aims and Objectives

To find the Platelet count and indices in Pregnancy Induced Hypertension.

3. Materials and Methods

This study was conducted in Father Muller Medical College.

This study was conducted from May 2011 to April 2014.

Sixty PIH confirmed cases were taken up for this study and thirty normal patients were taken as control. In the sixty cases thirty patients belonged to Pre – eclampsia and thirty were diagnosed to have eclampsia.

All necessary aseptic precaution were taken and samples were collected randomly in EDTA vials.

Detailed relevant history and clinical details were collected from patients. Samples were analysed for platelet indices: Platelet count (PC) Platelet distribution width (PDW), Mean Platelet volume (MPV), on auto- analyzer after collection in EDTA vials.

On the basis of clinical symptom patient were divided in three group:

Group 1:
Women having (B.P.>140/90 mmHg) and significant proteinuria were considered as pre - eclampsia

Group 2:
All the above said symptoms along with convulsions and seizures.

Group 3:
Normal Pregnancy

4. Results

Table 1: Mean age of the study Population

Group 1	Group 2	Group 3
31.26 years	29.26 years	24.35 years

In the present study the mean age of the population was 31.26 years in Group 1, 29.26 years in group 2 and 24.35 years in group 3.

Table 2: Mean Platelet Count

Group 1	Group 2	Group 3
1.36 Lakhs / mm ³	1.12 Lakhs / mm ³	2.62 Lakhs / mm ³

In the present study the mean platelet count of the population in group 1 was 1.36 Lakhs / mm³, in Group 2 it was found to be 1.12 Lakhs / mm³ and 2.62 Lakhs / mm³ in group 3.

Table 3: Mean Platelet Volume: (fL)

Group 1	Group 2	Group 3
9.1	8.05	11.1

In the present study the mean platelet volume of the population in group 1 was 9.1, in Group 2 it was found to be 8.05 and 11.1 in group 3.

Table 4: Platelet Distribution Width: (%)

Group 1	Group 2	Group 3
14.7	16.2	11.06

In the present study the mean platelet volume of the population in group 1 was 14.7, in Group 2 it was found to be 16.2 and 11.06 in group 3.

5. Discussion

In the present study the mean age of the population was 31.26 years in Group 1, 29.26 years in group 2 and 24.35 years in group 3. In the present study the mean platelet count of the population in group 1 was 1.36 Lakhs / mm³, in Group 2 it was found to be 1.12 Lakhs / mm³ and 2.62 Lakhs / mm³ in group 3. In the present study the mean platelet volume of the population in group 1 was 9.1, in Group 2 it was found to be 8.05 and 11.1 in group 3. In the present study the mean platelet volume of the population in group 1 was 14.7, in Group 2 it was found to be 16.2 and 11.06 in group 3.

In developing countries PIH has been attributed to be a significant cause of maternal and perinatal morbidity & mortality.³ In our study mean age of patients was 23.45±3.23 years, which is comparable with the studies of Vamsheedhar et al, Shivakumar S et al. and Prakash J et al. with mean age of 24.57±3.46, 24.3 and 24.75±3.360 respectively, however in Onisai et al study he observed that the mean age of PIH was 29.8 years.^{4,5}

In our study conducted by Rabia Parveen Siddiqui et al⁹. mean platelet count in pre-eclampsia was 1.97 Lakhs/cu mm which is comparable to studies by Vamsheedhar et al and Mohapatra et al, showing 1.5 Lakhs/cu mm and 1.8 Lakhs/cu mm respectively. Mean platelet count in eclampsia in our study was 1.44 Lakhs/cu mm which is agreeable with Anila et al. and Vrunda et al. who observed platelet count of 1.2 Lakhs/cu mm & 1.3 Lakhs/cu mm respectively.^{6,7} Langer et al has stated that approximately 50% of preeclampsia cases will develop thrombocytopenia, in our study 31.4% cases of pre-eclampsia & 32.5% cases of eclampsia were having thrombocytopenia. Thrombocytopenia in PIH is mostly caused due to increase consumption of platelet may be due to adherence of platelet at the site of damaged vascular endothelium. The platelet count in our series was compared which correlated well with values of other studies. In the study conducted by Rabia Parveen Siddiqui et al. they found an increase in MPV & PDW values from normotensive pregnant women to pre-eclampsia & eclampsia patients which correlated well with other studies conducted by Annam et al observed the value of MPV as 10.3 in pre-eclampsia.⁸ Our study is in agreement when comparable with Giles et al who observed PDW of 19, Annam et al observed the value of PDW as 16.78 in eclampsia.

6. Conclusion

When compared with the normotensive pregnant females, in the eclampsia and pre eclampsia pregnant females there are definite variations in the Platelet values and indices. This study forms a basis for further studies at various parts of the country and also to search answers taking place at a molecular level so that we understand the pathology in Depth.

References

- [1] Mohapatra S, Pradhan BB, Satpathy UK, Mohanty A, Pattnaik JR. Platelet estimation: Prognostic values in pregnancy induced hypertension. *Indian J physiolpharmacol* 2007;51:160-64.
- [2] Dr.M.A.Sameer¹, Dr.D.P.Meshram², Dr.S.A.Deshpande³, Dr.D.Sadhu⁴, Dr.Pandit S4, Role of platelet count as important prognostic marker in pregnancy induced hypertension.
- [3] Vigil D, Gracia U. Pregnancy complicated by pre-eclampsia/eclampsia with HELLP syndrome Elsevier, volume 72, Issue 1, January 2001, pages 17-23
- [4] Prakash J, Pandey LK, Singh AK, Kar B. Hypertension in pregnancy: Hospital based study. *J Assoc Physicians India* 2006; 54: 273-8.
- [5] Onisai M, Vladareaner AM, Bumbea H, Clorascu M, Pop C, Andrei C, et al. A study of haematological picture and of platelet function in preeclampsia -report of a series of cases. *J of Clin Med* 2009; 4: 326-27.
- [6] Jaleel A, Baseer A. Thrombocytopenia in pre-eclampsia: An earlier detector of HELLP syndrome. *J Pak Med Assoc.* 1997 Sep; 47: 45-6
- [7] Vrunda JK, Saila S. Lowered platelet count. A prognostic index in pregnancy induced hypertension. *J ObstetGynaecolInd* 2004; 54: 235-6
- [8] Giles C. The platelet count and mean platelet volume. *Br J Haematol.* 1981 May; 48 (1): 31- 7.
- [9] Rabia Parveen Siddiqui, Kajal Chandrakar, Ruchi Varma, Shruti Shrivastava. "Study on Platelet Indices in Pregnancy Induced Hypertension". *Journal of Evidence based Medicine and Healthcare*; Volume 2, Issue 44, November 02, 2015; Page: 8035-8040, DOI: 10.18410/jebmh/2015/1079