

Original Research Article

# A prospective case control study of coagulation profile in preeclampsia, eclampsia patients and normotensive antenatal cases

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## Abstract

**Background, Method:** A prospective case control study conducted in Department Obstetrics and Gynaecology and Department of Pathology in G.R. Medical College, Gwalior from 2019 to 2021. Study was conducted with 200 antenatal cases of which 50 normal ANC, 50 mild preeclampsia, 50 severe preeclampsia, 50 eclampsia selected from in patient and out patient department.

**Results:** mean platelet count, clotting time, INR shows significantly associated with severity of preeclampsia, eclampsia compared to normal ANC.

**Conclusion:** Platelet count showed inverse relationship with severity of pregnancy induced hypertension. Clotting time showed prolonged values with severity of pregnancy induced hypertension. Bleeding time, prothrombin time shows no statistical significance with severity of pregnancy induced hypertension.

**Keywords:** Coagulation profile, Prothrombin time, INR, preeclampsia, eclampsia.

## 1. INTRODUCTION

Hypertensive disorder complicating pregnancy vary from 5 to 10%.<sup>1</sup> It is responsible for 14% maternal deaths worldwide.<sup>2</sup>

In pregnancy induced hypertension, there is accentuation of hypercoagulable state as a result of injury to endothelium.<sup>3</sup>

Coagulation profile studied in pregnancy induced hypertension are platelet count, bleeding time, clotting time, prothrombin time, INR.<sup>3</sup>

These tests help in assessing severity of coagulation abnormalities in pregnancy induced hypertension at earlier stage prior to occurrence of complications like HELLP syndrome, DIC (Disseminated intravascular coagulation) and cerebrovascular complications.

Present study is to find out changes that occur in coagulation parameters in pregnancy induced hypertension. Then it is compared with normotensive pregnant women. This study may help in reducing the mortality and morbidity that are caused by coagulation abnormalities of pregnancy induced hypertension.

## 2. MATERIAL AND METHODS

This study was conducted in Department of Obstetrics and Gynaecology & Department of Pathology at Gajra Raja Medical College during the period January 2020 to June 2021.

**Source of data:** Pregnant women with preeclampsia and eclampsia admitted in the Department of Obstetrics and Gynaecology at Gajra Raja Medical College, Gwalior. Normal pregnant women attending outpatient clinic in the Departments of Obstetrics and Gynaecology, Gajra Raja Medical College, Gwalior

This study was designed as a comparative study and included a total of 200 patients 50 are normal ANC, 50 are mild preeclampsia, 50 are severe preeclampsia, 50 are eclampsia patients.

Selection of patients were based on the following

### **Inclusion criteria**

For cases Include pregnant women with diagnosis of preeclampsia.

- BP >140/90 twice taken 4 hrs apart
- Proteinuria >300mg/24 hours 'or'
- Protein concentration >1+ (concentration) on dipstick- a minimum of two random Urine samples collected at least 4-6 hours apart

Eclampsia patients include above features with history of convulsion.

### **For controls:**

Gestation Age and gestation matched normal pregnant women would constitute the control.

**Exclusion criteria:** Pregnant women with known history Of Essential Hypertension, known liver disease, Renal Disorder, Hydatidiform mole, known bleeding disorder, Anticoagulant therapy, Abruptio placentae, Intrauterine fetal death, labour, established DIC, Idiopathic Thrombocytopenic purpura, History of illicit drug use, any associated inflammatory disease or sepsis and any associated malignancy.

## **3. METHODS**

The blood coagulation parameters which were compared between the control and the study population were as follows:

Tests to assess the platelet function-

1. Bleeding time (BT)
2. Platelet count

Tests to assess the coagulation system -

1. Clotting time (CT)
2. Prothrombin time (PT)
3. INR

Detailed medical and obstetric history taken from the study group and procedure explained. After getting consent the following tests were done. The blood coagulation parameters which were compared between the control and the study population were as follows:

1. Bleeding time - BY IVYS method
  2. Clotting time - wright capillary tube method
  3. platelet count - BY automated haematology analyser SYSMEX XP-100
- Prothrombin time - by using automated analyser SYSMEX CA-5

### **Statistical Analysis**

- Chi-square test will be used to compare the variables. Data is expressed as mean± standard deviation.

- The p-value is calculated for each parameter and  $p < 0.05$  is considered statistically significant.

#### 4. RESULTS

**Table 1 : Comparison of Mean coagulative parameter between the study groups**

	(Mean) Bleeding Time	(Mean) Clotting Time	(Mean) Platelet Count	(Mean) Prothrombin Time	(Mean) INR
Normal ANC	103.80 $\pm$ 31.6	257.40 $\pm$ 45.3	1.8436 $\pm$ 0.507	14.410 $\pm$ 1.81	1.2362 $\pm$ 0.14
Mild Pre-eclampsia	106.20 $\pm$ 23.6	282.00 $\pm$ 43.2	1.6800 $\pm$ 0.55	15.096 $\pm$ 2.49	1.2716 $\pm$ 0.19
Severe Pre-eclampsia	105.60 $\pm$ 22.0	291.00 $\pm$ 48.1	1.516 $\pm$ 0.60	15.120 $\pm$ 1.61	1.114 $\pm$ 0.15
Eclampsia	116.40 $\pm$ 25.4	313.80 $\pm$ 51.1	1.1730 $\pm$ 0.48	15.060 $\pm$ 1.18	1.1072 $\pm$ 0.17

**Table 2 : Comparison of mean coagulative parameter p value in between the study groups**

	Mean BT P value	Mean CT P value	Mean Platelet P value	Mean PT P value	Mean INR P Value
Normal ANC vs Mild preeclampsia	0.967	0.047	0.425	0.246	0.716
Normal ANC vs Severe preeclampsia	0.986	0.002	0.014	0.218	0.001
Normal ANC vs Eclampsia	0.075	0.000	0.000	0.292	0.001
Mild preeclampsia vs Severe preeclampsia	0.999	0.026	0.423	1.00	0.000
Mild preeclampsia vs Eclampsia	0.205	0.005	0.000	1.00	0.000
Severe preeclampsia vs Eclampsia	0.163	0.094	0.009	0.99	0.999

Mean platelet count significantly associated with severity of preeclampsia, eclampsia patients when compared to normal ANC ( $p=0.000$ ).

Mean bleeding time not significantly associated with severity of preeclampsia, eclampsia patients when compared to normal ANC ( $p=0.06$ ).

Patients mean clotting time significantly associated with severity of preeclampsia, eclampsia patients when compared to normal ANC ( $p=0.000$ ).

Patients mean prothrombin time not significantly associated with severity of preeclampsia, eclampsia patients when compared to normal ANC ( $p=0.16$ ).

Patients mean INR significantly associated with severity of preeclampsia, eclampsia patients when compared to normal ANC ( $p=0.000$ ).

## 5. DISCUSSION

Coagulation profile include platelet count, bleeding time, clotting time, Prothrombin time, INR studied in normal ANC, mild pre-eclampsia, severe pre-eclampsia, eclampsia patients

Mean platelet count is significantly associated with severity of preeclampsia and eclampsia compared to ANC. Similar relevance found with Shete Anjali et al (2013)<sup>4</sup> and Bhia Namavar Jahrom et al (2009)<sup>5</sup>.

Mean bleeding time found not significantly associated with severity of preeclampsia and eclampsia compared to ANC. Similar relevance found with Joshi et al (2004)<sup>6</sup>, Gosavi AN (2020)<sup>7</sup>.

Mean clotting time is significantly associated with severity of preeclampsia and eclampsia compared to ANC. Similar relevance found with Priyanka Chauhan et al (2014)<sup>8</sup>.

Mean prothrombin time found not significantly associated with severity of preeclampsia and eclampsia compared to ANC. Similar relevance found with Upam Kr Sharma et al(2015)<sup>9</sup> and Chauhan P et al<sup>8</sup>.

## 6. CONCLUSION

- Present study revealed changes in coagulation parameters in women with mild, severe preeclampsia, eclampsia which was compared to normotensive pregnant women.
- Platelet count showed inverse relationship with severity of pregnancy induced hypertension.
- Clotting time showed prolonged values with severity of pregnancy induced hypertension.
- Bleeding time, prothrombin time shows no statistical significance with severity of pregnancy induced hypertension.
- HELLP syndrome, DIC are coagulation abnormalities contributing for maternal deaths in pregnancy induced hypertension.
- Present study can helpful in identify coagulation abnormalities in relation to pregnancy induced hypertension in early stage and helpful for managing complications in relation to pregnancy induced hypertension.

## 7. REFERENCES

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