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# AN OBSERVATIONAL STUDY OF COAGULATION PROFILE IN PRE ECLAMPSIA AND ECLAMPSIA IN TERTIARY CARE CENTER

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## Abstract

**Introduction:** Hypertensive disorders remain the most significant and unsolved problems in obstetrics. 5 to 10 percent of all pregnancies are complicated by hypertensive disorders. Hypertensive disorders, hemorrhage and infection- are the three most common reasons behind maternal morbidity and maternal mortality which form the lethal triad of maternal mortality. Among hypertensive disorders the preeclampsia either alone or superimposed on chronic hypertension, is the most dangerous.

**Materials and Methods:** Study conducted at Department of Obstetrics and Gynaecology, Andhra Medical College, Vishakhapatnam from March 2022 to February 2023. 100 cases were taken those with blood pressure 140/90mmHg and above are divided in to three groups. The non severe PRE-ECLAMPSIA group consists of 59 pregnant women with blood pressure between 140/90mmHg and 160/110mmHg. The severe PRE- ECLAMPSIA group consists of 22 pregnant women with systolic blood pressure above 160mmHg and diastolic blood pressure above 110mmHg with symptoms like vomiting, headache, Visual Disturbances, Upper abdominal Pain. Other 19 cases were Eclampsia cases i.e which had atleast 1 episode of seizures in PRE- ECLAMPSIA cases.

**Results:** Of the 100 cases allotted in the study 45 cases (45%) belong to 21-25 years of age, 36 cases (36%) belong to 18 -20 years of age, and only 7 (7%) are above 31years of age of which only 1 case is of 40 years of age. Of the total 100 cases, 63 cases (63%) belong to Term gestation i.e above 37weeks of gestation, of which 60 cases are between 37-40 weeks and 3 cases above 40 weeks of gestation. 24 cases (24%) belong to 34-36 weeks, 10 cases (10%) belong to 32-34 weeks. Most of the cases i.e 57 cases (57%) are primi gravida and only 43% are multi gravida, of which 31% had only one previous pregnancy i.e second gravida. Of the 22 cases of severe pre-eclampsia,13 cases (59.1%) had APTT 31- 36 seconds,6 cases ( 27.3%) had APTT 36-40 seconds, 2 cases (9.1%) had APTT 28-31 seconds and only 1case (4.5%) had APTT >40 seconds and no casehad APTT <28 seconds .

**Conclusion:** Coagulation abnormalities include HELLP syndrome and disseminated intra vascular coagulation contribute the causes for maternal deaths in Pre-Eclampsia. Present study can be helpful in identifying the coagulation abnormalities in relation to Pre-Eclampsia in earlier stage and can be helpful for the management of complications in relation to Pre-Eclampsia. Severe pre eclampsia and eclampsia can be associated with normal platelet counts; therefore, present study shows that platelet count alone cannot be relied upon to assess the severity of Pre-Eclampsia. Maternal and fetal mortality and morbidity can be reduced with the help of this study.

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**Key Words:** Hypertensive disorders, primi gravida, multigravida, pregnancy.

## INTRODUCTION

Hypertensive disorders remain the most significant and unsolved problems in obstetrics. 5 to 10 percent of all pregnancies are complicated by hypertensive disorders. Hypertensive disorders, hemorrhage and infection- are the three most common reasons behind maternal morbidity and maternal mortality which form the lethal triad of maternal mortality. Among hypertensive disorders the preeclampsia either alone or superimposed on chronic hypertension, is the most dangerous. New onset hypertension during pregnancy- termed gestational hypertension-in almost 50% of cases is followed by signs and symptoms of preeclampsia. Preeclampsia is seen in 4 to 5 percent of all pregnancies.

Preeclampsia is best described as a pregnancy-specific syndrome that can affect virtually every organ system. Preeclampsia (PE) is characterized with hypertension (blood pressure 140/90 mmHg), proteinuria (0.3 g/d) and other symptoms and may begin as early as the 20th gestational week and last for 6 weeks after delivery. Furthermore, PE has high morbidity and mortality rates. The pathogenesis of PE remains unknown, and there are many theories regarding its etiology. The abnormal invasion of placenta and the release of placenta-derived adverse factors during the first trimester is considered to be the main cause of the extensive damage to the maternal endothelium and systemic inflammatory response involving many systems and organs in late pregnancy. As of now, there is no effective treatment for PE in addition to the termination of pregnancy. Therefore, a reliable predictor for PE will play an important role in early prevention and intervention. PE can be classified into two degrees, non severe PE and severe PE, and there are different treatments and clinical outcomes for each degree. It is important to predict the severity of PE for rational gestational management. In PE patients, the coagulation-fibrinolytic system is thought to be one of the most seriously affected systems by maternal inflammatory reactions and immune dysfunction. The balance between coagulation and anticoagulation is vital to the regulation of utero-placental circulation and organ perfusion in pregnant woman. An appropriate increase in blood coagulation is important for normal pregnant woman to some extent to decrease postpartum haemorrhage (PPH) and to limit other complications.

Furthermore, the involvement of patients with haemolysis elevated liver enzymes and low platelet count (HELLP) syndrome, immune thrombocytopenic purpura (ITP) or gestational thrombocytopenia (GT) would necessarily cause a confounding bias. Therefore, we aimed to eliminate these interfering factors to determine their potential value in predicting the onset and severity of PE for early intervention.

## AIMS AND OBJECTIVES

- To study the variation of parameters of coagulation- BT, CT, PT, aPTT, INR in women with pre-eclampsia and eclampsia and to establish their relation to severity of pre-eclampsia and eclampsia in pregnancy.
- To study the variation of platelet count in women with pre-eclampsia and eclampsia and to establish relationship with severity of pre-eclampsia and eclampsia to platelet count.
- To detect DIC by using parameters of coagulation for early prediction and promt management.

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## MATERIALS AND METHODS

**Source of Data:** Pregnant women with Pre-Eclampsia admitted in obstetrics department, Andhra Medical College, Vishakhapatnam.

**Study Period:** March 2022 to February 2023.
**Study Place:** Department of Obstetrics and Gynaecology, Andhra Medical College, Vishakhapatnam.

**Study Period:** March 2022 to February 2023.

**Study Design:** Prospective observational study.
**Sample Size**: 100 cases.
**Inclusion Criteria:**

- Pregnant women with pre-eclampsia I.e period of gestation >20 weeks with BP at or above 140/90 mm of Hg on atleast 2 occasions >6 hrs apart along with proteinuria greater than or equal to 300mg/24hrs, urine protein : creatinine > 0.3, dip stick 1+ persistent Or End organ damage, thrombocytopenia (platelet count <1,00,000/microL), renal insufficiency (creatinine level >1.1 mg/dl), liver involvement (serum transaminase levels twice normal), cerebral symptoms (headache, visual disturbances).

- Eclampsia i.e pre-eclampsia complicated with seizures.

**Exclusion Criteria:**

- Normal pregnant women
- All cases with pre-existing hypertension other than pre-eclampsia.
- Patients having gestational hypertension without pre-eclampsia
- patients having co morbid conditions like prior coagulopathies, bleeding disorders, severe anaemia, diabetes mellitus, h/o auto immune disorder, h/o I.T.P (idiopathic thrombocytic purpura), h/o receiving drugs like aspirin and anti-coagulants
- Patients who did not give consent for the study.

**Methodology:** Study conducted at Department of Obstetrics and Gynaecology, Andhra Medical College, Vishakhapatnam from March 2022 to February 2023. 100 cases were taken those with blood pressure 140/90mmHg and above are divided in to three groups. The non severe PRE-ECLAMPSIA group consists of 59 pregnant women with blood pressure between 140/90mmHg and 160/110mmHg. The severe PRE- ECLAMPSIA group consists of 22 pregnant women with systolic blood pressure above 160mmHg and diastolic blood pressure above 110mmHg with symptoms like vomiting, headache, Visual Disturbances, Upper abdominal Pain. Other 19 cases were Eclampsia cases i.e which had atleast 1 episode of seizures in PRE- ECLAMPSIA cases.

Detailed medical and obstetric history taken from the study groupand procedure explained. After getting consent, the following tests were done. Bleeding time –By DUKE'S method. Clotting time –Wright' capillary tube method. Platelet count-By Automated Haematology analyser SYSMEX XP-100. Prothrombin Time and APTT- By using Automated Analyser SYSMEX CA-50.

## RESULTS

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Statistical methods used for analysis of coagulation parameters include SPSS 18 software, Anova. Of the 100 cases allotted in the study 45 cases (45%) belong to 21-25 years of age, 36 cases (36%) belong to 18 -20 years of age, and only 7 (7%) are above 31years of age of which only 1 case is of 40 years of age.

Of the 100 cases 45 cases (45%) belong to age group between 21-25 years, 36 cases (36%) belong to age 18-20 years, accounting to most of the cases I.e 81% of the cases belonging to age in between 18 and 25years. Only 7 cases belong to age above 31years, of which highest age was 40 years (1 case).

Of the total 59 cases of non severe pre-eclampsia ,32 cases belong to 21-25 years of age i.e 54.2%, 13 cases belong to 18-20 years of age i.e 22%, and only5 cases i.e 8.5 % are above 31years of age.

Of the total 22 cases of severe pre-eclampsia, 11 cases (50%) belong to 18-20 years age, 6 cases (27.3%) belong to 21-25 years of age, 3 cases (13.6%) belong to 26-30 years age and only 2 cases are above 31 years of age. Of the total 19 cases of eclampsia, 12 cases (63.2%) belong to 18-20 yearsage, and remaining 7 cases belong to age 21-25 years.

Of the 100 cases allotted in the study, 74 cases (74%) belong to lower class, 14 cases (14%) belong to lower middle, 9 cases (9%) belong to upper lower class, only 3 cases (3%) belong to upper middle class, according to modified kuppuswamy classification.

Mean period of gestation of 100 cases taken is 36 weeks 6 days, with 32weeks period of gestation being the least and 40 weeks 4days being the highest.

**Table 1: Distribution of Cases According To Period ofGestation and Severity of Hypertensive Disorders**

| | | | Severity Grading | | | Total |
|---|---|---|---|---|---|---|
| | | | Eclampsia | Non Severe Preeclmpsia | Severe Pre Eclampsia | |
| Period Of Gestation | <32 Weeks | N | 2 | 0 | 1 | 3 |
| | | % | 10.5% | 0.0% | 4.5% | 3.0% |
| | 32-34 weeks | N | 3 | 1 | 6 | 10 |
| | | % | 15.8% | 1.7% | 27.3% | 10.0% |
| | 34-36 weeks | N | 11 | 5 | 8 | 24 |
| | | % | 57.9% | 8.5% | 36.4% | 24.0% |
| | 37-40 weeks | N | 3 | 51 | 6 | 60 |
| | | % | 15.8% | 86.4% | 27.3% | 60.0% |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | >40 weeks | N | 0 | 2 | 1 | 3 |
| | | % | 0.0% | 3.4% | 4.5% | 3.0% |
| Total | | N | 19 | 59 | 22 | 100 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Chi-Square: 50.99, P Value: 0.01, Statistically significant

Of the total 100 cases, 63 cases (63%) belong to Term gestation i.e above 37weeks of gestation, of which 60 cases are between 37-40 weeks and 3 cases above 40 weeks of gestation. 24 cases (24%) belong to 34-36 weeks, 10 cases (10%) belong to 32-34 weeks.

of the total 59 cases of non severe pre-eclampsia,51 cases (86.4%) belong to 37-40 weeks gestational age. 89.8% of cases i.e 53 cases belong to term gestation .No case of this category belong to 32weeks of gestation, only 1 case belong to less than 34 weeks gestation and 5 cases (8.5%) belong to 34-36 weeks of gestation.

Of the total 22 cases of severe pre-eclampsia, 8 cases (36.4%) are between 34-36 weeks, 7 cases (31.8%) belong to term gestation, 6 cases (27.3%) belong to 32-34 weeks and only 1 case (4.5%) belong to less than 32 weeks. Of the total 19 cases of eclampsia, 11 cases (57.9%) belong to 34-36 weeks. No case was beyond 40 weeks gestation. 3 cases (15.8%) belong to 37-40 weeks gestation .3 cases (15.8%) belong to 32-34 weeks gestation. 2 cases (10.5%) belong to less than 32 weeks gestation. Most of the cases i.e 57.9 % of eclampsia belong to late pre term i.e 34-36 weeks.

Most of the cases i.e 57 cases (57%) are primi gravida and only 43% are multigravida, of which 31% had only one previous pregnancy i.e second gravida.

Of the total cases, 71 cases (71%) are nulli para, signifying the importance of parity in association with hypertensive disorders of pregnancy. 22 cases are primi para.

Out of 100 cases, 75 cases (75%) do not have atleast a single live child, 22cases had 1 live child and 2 cases had 2 live child.

Of the 100 cases, mean systolic blood pressure is 150 mm Hg and mean diastolic blood pressure is 95 mm Hg.

Of the total 100 cases, urine albumin is +1 in 58 cases (58%) implying 30 mg /dl of protein in urine, +2 in 18 cases (18%) implying 100 mg/dl of protein excretion in urine and severe pre - eclampsia, +3 in 17 cases (17%) implying 300 mg/dl of protein excretion, +4 in 7 cases (7%) implying >2gm/dl of protein excretion.

Of the total 59 cases of non severe pre-eclampsia, 58 cases had +1 urine albumin. Of the total 22 cases of severe pre-eclampsia, 16 cases had +2 urine albumin, 6 cases had +3 urine albumin. Of the total 19 cases of eclampsia, 11 cases had +3 urine albumin, 7 cases had +4 urine albumin, 1 case had +2 urine albumin.

**Table 2: Distribution of Cases**

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| | | Frequency | Percent |
|---|---|---|---|
| **Severity Grading** | Eclampsia | 19 | 19.0% |
| | Non severe preeclampsia | 59 | 59.0% |
| | Severe preeclampsia | 22 | 22.0% |
| | Total | 100 | 100.0% |

Of the total 100 cases, 59 cases had non severe pre-eclampsia, 22 cases had severe pre-eclampsia and 19 cases had eclampsia.

Of the 100 cases, 28 cases had headache, 10 cases had blurring of vision, 2 cases had epigastric pain and 2 cases had vomitings. All of them belong to severe pre-eclampsia and eclampsia. Of the 100 cases, 19 had seizures (19 caseshad eclampsia).

Mean systolic blood pressure is 141.86 with standard deviation of 5.077 and mean diastolic blood pressure is 87.97 with standard deviation of 5.807 in case ofnon severe pre-eclampsia.

Mean systolic blood pressure is 158.18 with standard deviation of 3.948 and mean diastolic blood pressure is 104.09 with standard deviation of 6.661 in case of severe pre-eclampsia.

Mean systolic blood pressure is 167.37 with standard deviation of 8.719 and mean diastolic blood pressure is 107.37 with standard deviation of 7.335 in case of eclampsia.

Mean platelet count in non severe pre-eclampsia cases is 227745.763 with standard deviation of 23917.6700. Mean platelet count in severe pre-eclampsia cases is 144000.000 with standard deviation of 23529.11. Mean platelet count in eclampsia cases is 101473.684 with standard deviation of 22000.9303.

**Table 3: Mean Platelet Count among Cases**

| | **Non Severe Pre Eclampsia** | | **Severe Pre Eclampsia** | | **Eclampsia** | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| PLATELET COUNT | 227745.7 | 23917.67 | 144000.0 | 23529.11 | 101473.68 | 22000.93 |

Mean platelet count in non severe pre-eclampsia cases is 227745.763 with standard deviation of 23917.6700. Mean platelet count in severe pre-eclampsia cases is 144000.000 with standard deviation of 23529.11. Mean platelet count in eclampsia cases is 101473.684 with standard deviation of 22000.9303.

**Table 4: Distribution of Platelet Count among Cases**

| | | | **Severity Grading** | | | **Total** |
|---|---|---|---|---|---|---|
| | | | **Non Severe Pre Eclamps** | **Severe Pre Eclamps** | **Eclampsi** | |
| Platelet Count (Lakh/mm | 0.6-1.6 | n | 0 | 17 | 18 | 35 |
| | | % | 0.0% | 77.3% | 94.7% | 35.0% |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | 1.6-2.6 | n | 57 | 5 | 1 | 63 |
| | | % | 96.6% | 22.7% | 5.3% | 63.0% |
| | 2.6-3.6 | n | 2 | 0 | 0 | 2 |
| | | % | 3.4% | 0.0% | 0.0% | 2.0% |
| Total | | n | 59 | 22 | 19 | 100 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Chi square: 78.94, P-value : 0.001 , statistically significant .

0f the total 59 cases of non severe pre-eclampsia ,most cases i.e 57 (96.6%) had platelet count ranging 1.6 -2.6 lakh /mm3 , 2 cases (3.4%) had platelet count ranging 2.6 -3.6 lakh /mm3 and no case had platelet count below1.6 lakh /mm3. Of the total 22 cases of severe pre-eclampsia , most cases i.e 17 (77.3 %) had platelet count ranging 0.6 – 1.6 lakh/mm3 ,5 (22.7%) cases had platelet count ranging 1.6-2.6 lakh/mm3 and no case had platelet count above 2.6 lakh/mm3.

Of the total 19 cases of eclampsia ,18 cases (94.7 % ) had platelet count ranging 0.6 to 1.6 lakh /mm3, 1 case (5.35 %) had platelet count ranging 1.6 -2.6 lakh/mm3 and no case had platelet count below 2.6 lakh /mm3.

**Table 5: Mean Bleeding Time According To Severity**

| | **NON SEVERE PRE ECLAMPSIA** | | **SEVERE PRE ECLAMPSIA** | | **ECLAMPSIA** | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| BT[min] | 2.833 | 23.4504 | 3.7 | 32.8381 | 4.35 | 39.6539 |

Mean bleeding time of non severe pre-eclampsia is 172.898 with standarddeviation of 23.4504. Mean bleeding time of severe pre-eclampsia is 225.364 with standarddeviation of 32.8381.

Mean bleeding time of cases of eclampsia is 261.105 with standard deviation of 39.6539.

**Table 6: Distribution of Bleeding Time among Cases**

| | | | Severity Grading | | | Total |
|---|---|---|---|---|---|---|
| | | | Non Severe Pre Eclampsia | Severe Pre Eclampsia | Eclampsia | |
| Bleeding Time | 1.83-2.5 min | n | 12 | 0 | 0 | 12 |
| | | % | 20.3% | 0.0% | 0.0% | 12.0% |
| | 2.51- | n | 31 | 3 | 0 | 34 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | 3.1 min | % | 52.5% | 13.6% | 0.0% | 34.0% |
| | 3.18-3.83min | n | 15 | 11 | 5 | 31 |
| | | % | 25.4% | 50.0% | 26.3% | 31.0% |
| | 3.85-4.3 min | n | 1 | 6 | 3 | 10 |
| | | % | 1.7% | 27.3% | 15.8% | 10.0% |
| | >4.35 min | n | 0 | 2 | 11 | 13 |
| | | % | 0.0% | 9.1% | 57.9% | 13.0% |
| Total | | n | 59 | 22 | 19 | 100 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Chi-Square: 75.39, P Value: 0.001, Statistically significant

Of the 59 cases of non severe pre-eclampsia, 31 cases (52.5%) had bleeding time of 151-190 seconds ,15 cases (25.4%) had bleeding time of 191-230 seconds ,12 cases (20.3%) had bleeding time of 110-150 seconds and no case had bleeding time >261 seconds. Of the 22 cases of severe pre-eclampsia, 11 cases (50%) had bleeding time of 191-230 seconds ,6 cases (27.3%) had bleeding time of 231-260 seconds,2 cases (9.1%) had bleeding time > 261 seconds and no case had bleeding time <150 seconds. Of the 19 cases of eclampsia,11 cases (57.9%) had bleeding time >261 seconds ,5 cases (26.3%) had bleeding time of 191-230 seconds ,3 cases (15.8%) had bleeding time of 231-260 seconds and no case had bleeding time <90 seconds.

**Table 7: Mean Clotting Time among Cases**

| | **Non Severe Pre Eclampsia** | | **Severe Pre Eclampsia** | | **Eclampsia** | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| CT[min] | 4.5 min | 37.8247sec | 5.36 min | 48.6867sec | 6.16 min | 52.4098sec |

Mean clotting time of cases of non severe pre-eclampsia is 270.322 with standard deviation of 37.8247. Mean clotting time of cases of severe pre-eclampsia is 322.727 with standard deviation of 48.6867. Mean clotting time of cases of eclampsia is 371.316 with standard deviation of 52.4098.

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**Table 8: Distribution of Clotting Time among Cases**

| | | | SEVERITY GRADING | | | Total |
|---|---|---|---|---|---|---|
| | | | Non Severe Pr Eclampsia | Severe Pre Eclampsia | Eclampsia | |
| Clotting time | 3.33-4.33min | N | 25 | 1 | 0 | 26 |
| | | % | 42.4% | 4.5% | 0.0% | 26.0% |
| | 4.33-5.16min | N | 27 | 10 | 3 | 40 |
| | | % | 45.8% | 45.5% | 15.8% | 40.0% |
| | 5.16-6 min | N | 7 | 6 | 5 | 18 |
| | | % | 11.9% | 27.3% | 26.3% | 18.0% |
| | 6-6.83min | N | 0 | 3 | 9 | 12 |
| | | % | 0.0% | 13.6% | 47.4% | 12.0% |
| | 6.83-7.6min | N | 0 | 2 | 0 | 2 |
| | | % | 0.0% | 9.1% | 0.0% | 2.0% |
| | 7.6-8.5min | N | 0 | 0 | 2 | 2 |
| | | % | 0.0% | 0.0% | 10.5% | 2.0% |
| Total | | N | 59 | 22 | 19 | 100 |
| | | % | 100.0% | 100.0% | 100.0% | 100.0% |

Chi-Square: 63.92, P Value: 0.01, Statistically significant

Of the 59 cases of non severe pre-eclampsia, 27 cases (45.8%) had clotting time of 260-310 seconds, 25 cases (42.4%) had clotting time of 200-260 seconds

7 cases (11.9%) had clotting time 310-360 seconds and no case had clotting time >360seconds.

Of the 22 cases of severe pre-eclampsia,10 cases (45,5%) had clotting time of 260-310 seconds ,6 cases (27.3%) had clotting time of 310-360 seconds 3 cases (13.6%) had 360-410 seconds,2

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cases (9.1%) had 410-460 seconds, 1 case (4.5%) had 200-260 seconds and no case had clotting time above 460 seconds.

Of the 19 cases of eclampsia, 9 cases (47.4%) had clotting time of 360-410 seconds ,5 cases (26.3%) had 310-360 seconds, 3 cases (15.8%) had 260-310 seconds, 2 cases (10.5%) had 460-510 seconds and no case had clotting time <260 seconds.

**Table 9: Mean Prothrombin Time According To Severity**

| | **Non Severe Pre Eclampsia** | | **Severe Eclampsia** | | **Eclampsia** | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| PT | 11.593 | 1.0549 | 14.227 | 1.2475 | 15.205 | 1.2946 |

Mean prothrombin time of non severe pre-eclampsia cases is 11.593 with standard deviation of 1.0549. Mean prothrombin time of severe pre-eclampsia cases is 14.227 with standard deviation of 1.2475. Mean prothrombin time of cases of eclampsia is 15.205 with standard deviation of 1.2946.

Of the 59 cases of non severe pre-eclampsia,31 cases (52.5%) had PT 10- 12 seconds ,21 cases (35.6%) had PT 12-14 seconds,7 cases (11.9%) had PT 8- 10 seconds and no case had PT >14 seconds. Of the 22 cases of severe pre-eclampsia,12 cases (54.5%) had PT 14-20 seconds ,10 cases (45.5%) had PT 12-14 seconds and no case had PT <12 seconds.

Of the 19 cases of eclampsia, 16 cases (84.2%) had PT 14-20 seconds,3cases (15.8%) had PT 12-14 seconds and no case had PT <12 seconds.

**Table 10**: **Mean APTT According To Severity**

| | Non Severe Pre Eclampsia | | Severe PreEclampsia | | Eclampsia | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| APTT | 30.380 | 2.4335 | 35.518 | 3.4506 | 36.732 | 5.1467 |

Mean APTT of cases of non severe pre-eclampsia is 30.380 with standarddeviation of 2.4335. Mean APTT of cases of severe pre-eclampsia is 35.518 with standarddeviation of 3.4506. Mean APTT of cases of eclampsia is 36.732 with standard deviation of5.1467.

Of the 59 cases of non severe pre-eclampsia,32 cases (54.2%) had APTT 31-36 seconds ,18 cases (30.5%) had APTT 28-31 seconds,6 cases (10.2%) hadAPTT 25-28 seconds ,3 cases (5.1%) had APTT 22-25 seconds and no case hadAPTT >36 seconds.

Of the 22 cases of severe pre-eclampsia,13 cases (59.1%) had APTT 31- 36 seconds,6 cases ( 27.3%) had APTT 36-40 seconds, 2 cases (9.1%) had APTT 28-31 seconds and only 1case (4.5%) had APTT >40 seconds and no casehad APTT <28 seconds .

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Of the 19 cases of eclampsia, 8 cases (42.1%) had APTT 36-40 seconds,6 cases (31.6%) had APTT 31-36 seconds, 3 cases (15.8 %) had APTT >40 seconds, 1case (5.3%) had APTT 28-31 seconds and 22-25 seconds.

## DISCUSSION

Pre-Eclampsia is a commonly encountered disorder in human pregnancies. In almost half of these cases, disorder progresses to pre eclampsia, a dangerous condition which can be fatal. Pre eclampsia forms the deadly triad of maternal deaths along with obstetric hemorrhage and sepsis. This study was done to know the variation in platelet count and other parameters of coagulation like BT, CT, PT, aPTT in pre eclampsia and eclampsia patients and to study how they differ from normal patients and how severity of pre eclampsia has its effect on these parameters so that changes in platelet and coagulation profile helps in early prediction of increasing disease severity.[6]

The present study was done in 100 patients in our institute out of which 59 cases were mild pre eclampsia, 22 were severe pre eclampsia and 19 were eclampsia cases. Around 1 lakh women die worldwide due to eclampsia with estimated loss of around one mother every 3 minutes worldwide caused by pre eclampsia and eclampsia. Pre eclampsia causes or fetal and maternal outcomes, thankfully it has a foreseeable onset and progression, may be cured in many cases by termination of pregnancy. In India Pre-Eclampsia continues to be the major cause of perinatal deaths in view of IUGR and prematurity.[7]

In the present study, most of the patients were in the age ranging between 18-25 years; to be more precise 21-25 years age group accounts to almost 45% of cases ; mean age in the present study was 22.96 years which was in accordance with the study of Meshram DP et al., who observed mean of 24.55 years in pre-eclampsia and 24.30 years in eclampsia; Chaware SA et al., who observed mean age of 24 years (19-33 years) in mild pre-eclampsia, 22.7 years (19- 35 years) in severe pre-eclampsia and 23.9 (19-35) in eclampsia and Naaz A et al., observed mean age for PRE-ECLAMPSIA was 24.5514.86 years ; chaware SA et al in which age range in most cases was 21-29 years and also consistent with Chauhan et al in which mean age was 22.9 years.[8]

In present study most of the cases of non severe pre eclampsia had age range between 21 -25 years which corresponds to total average. Most of the cases of severe pre eclampsia and eclampsia had age range between 18 -20 years [50% and 63% respectively]. This ascertains that early age at pregnancy is a high risk factor for severe hypertensive disorders of pregnancy.

Eclampsia was more common in primipara. Present study showed PRE- ECLAMPSIA was more common in nullipara; most of the cases i.e 71 % were nulliparous. This signifies the importance of association of nullipara and PRE- ECLAMPSIA.

Present study finding of increased incidence of PRE- ECLAMPSIA in primipara was in concordance with Meshram DP et al., who reported PRE- ECLAMPSIA about 66.50% in primipara compared to 33.50% in multiparity. Chaware SA et al., and Nirmala T et al., also found PRE- ECLAMPSIA more common in Primipara (62.5% and 61%, respectively) and also Feroza sultana et al also ascertained that PRE- ECLAMPSIA is more common in nullipara.[9]

Mean systolic blood pressure and diastolic blood pressure in present study was 150 mm Hg, 95 mm Hg. Mean systolic and diastolic pressure in non severe pre eclampsia was 141, 87 mmHg, in

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severe was 158,104 mmHg; in eclampsia was 167, 107 mmHg. In chaware SA et al mean systolic and mean diastolic in eclampsia cases were 166 and 103 mmHg. These findings are also consistent with Chauhan P et al, Mohapatra P et al and Meshram P et al.

**Bleeding Time:** Present study showed the mean bleeding time for non severe pre eclampsia, severe Pre eclampsia and Eclampsia were 172 seconds, 225 seconds and 261 seconds respectively. P value 0.001 significant. Therefore bleeding time significantly increases with severity. In non severe pre eclampsia bleeding time for most of the cases was between 151-190 seconds. Only 1 case had bleeding time above 230 seconds. In severe pre eclampsia most of the cases had bleeding time between 190 -230 seconds. In Eclampsia most of the cases had bleeding time above 260 seconds. P value is significant.

Priyanka Chauhan et al 2014 study showed bleeding time for normal pregnancy, non severe PRE-ECLAMPSIA and severe PRE- ECLAMPSIA were 180 seconds, 294 seconds and 324 seconds respectively, with significant p-value (<0.001). So this study correlated well with present study.

**Clotting Time:** Present study showed the mean clotting time for non severe pre eclampsia was 270 seconds, clotting time for the severe Pre eclampsia was 322 seconds and the Eclampsia was 371 seconds, the P-value is 0.01 and so is significant.

**Platelet Count:** Thrombocytopenia is seen in around 6% of pregnant women most common cause being pre eclampsia and eclampsia. A continuous reduction in platelet count is found in Fay et al and Shah A R et al as pregnancy advances indicating platelet hyper destruction as pregnancy advances. This along with hemodilution and trapping of platelets results in thrombocytopenia. According to McCrae thrombocytopenia may precede other manifestations of pre eclampsia, and so should be carefully evaluated in cases of isolated thromocytopenia in late second and third trimester.[10]

**Prothrombin Time:** In present study the mean prothrombin time for non severe pre eclampsia, pre eclampsia and Eclampsia patients were 11.6 seconds, 14.2 seconds and 15.2 seconds respectively, with significant P-value <0.001

**Activated Partial Thromboplastin Time (APTT):** In present study the mean APTT for non severe pre eclampsia, severe pre eclampsia and Eclampsia patients were 30.4 seconds, 7735.5 seconds and 36.7 seconds respectively, with significant P-value <0.001.

## CONCLUSION

Normal pregnancy is a procoagulant state which is aggravated in pre-eclampsia because of the constant endothelial damage that causes repeated activation of the coagulation cascade leading to consumption of platelets and coagulation factors. Present study revealed changes in the coagulation parameters in women with Pre-Eclampsia. Changes in coagulation profile parameters and their relation to severity of Pre-Eclampsia is studied. Platelet count showed inverse relationship with severity of Pre-Eclampsia and the risk of coagulopathy increases with severity of thrombocytopenia. Bleeding time, Prothrombin time and Activated Partial Thromboplastin time showed prolonged values with severe Pre-Eclampsia. With increasing severity of blood pressure in pregnant women changes noted in the coagulation parameters. The study gives a guideline for investigations to be done in cases of PRE- ECLAMPSIA which can alert the obstetrician about the severity of the disease so that appropriate and timely management can be initiated.

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Coagulation abnormalities include HELLP syndrome and disseminated intra vascular coagulation contribute the causes for maternal deaths in Pre-Eclampsia. Present study can be helpful in identifying the coagulation abnormalities in relation to Pre-Eclampsia in earlier stage and can be helpful for the management of complications in relation to Pre-Eclampsia. Severe pre eclampsia and eclampsia can be associated with normal platelet counts; therefore, present study shows that platelet count alone cannot be relied upon to assess the severity of Pre-Eclampsia. Maternal and fetal mortality and morbidity can be reduced with the help of this study.

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