

## EVALUATION OF SEVERITY OF PREGNANCY INDUCED HYPERTENSION USING THROMBOCYTOPENIA AS A PROGNOSTIC INDICATOR AND ITS CORRELATION WITH MATERNAL AND FETAL OUTCOME

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### Abstract

**Background:** The most frequent medical condition associated with pregnancy, pregnancy-induced hypertension (PIH), causes serious multiorgan failure in the mother. Blood pressure >140/90 mm Hg after 20 weeks of gestation in a mother who was previously normotensive is considered pregnancy-induced hypertension. This study was conducted to know the incidence of thrombocytopenia in pregnancy induced hypertension and its effect on maternal and fetal outcome. **Materials and Methods:** It was a cross-sectional study done in Mamata general hospital over a period of 18 months. Women were divided into 3 groups with a sample size of 30 in each group. Group 1 had mild PIH (gestational hypertension) which consisted of 30 women, Group 2 had severe PIH (preeclampsia) which consisted of 30 women and Group 3 had eclampsia which consisted of 30 women who have fulfilled the inclusion criteria and exclusion criteria. **Result:** Majority (50%) of the women in Gestational Hypertension group, 53 % of the women in Preeclampsia group were between the age group 21-25years. In this study total 12 women had thrombocytopenia out of 90 (1 in Gestational Hypertension, 6 in Preeclampsia, 5 in Eclampsia groups). In this study overall maternal mortality is 4% (3). Incidence of thrombocytopenia is 13 % (12). Mortality among thrombocytopenic group women is 3%(2), and in normal platelet count group maternal mortality is 1%(1). In Gestational Hypertension group majority of fetuses had good outcome. In Preeclampsia group in mother with thrombocytopenia (20%) only 3 % mortality was seen in their fetuses. In Eclampsia group in mother with thrombocytopenia (16%) 13 % mortality was seen in their fetuses. Overall fetal mortality in this study was 26%, mortality in thrombocytopenia group was 6% (4 % in eclampsia group and 2 % in pre-eclampsia group), Mortality in normal platelet count group was 20%(9%(8) in pre-eclampsia group, 11%(10) in eclampsia group. **Conclusion:** The severity of the maternal problems is closely connected with the degree of thrombocytopenia. However, fetal outcome is indirectly connected with the gestational age of the mother, so if she arrived in the first few weeks of pregnancy with issues like HELLP, the fetus will have a poor fate.

### INTRODUCTION

Pregnancy induced hypertension (PIH) is the most common medical disorder of pregnancy that leads to complicated multiorgan failure in the mother. Pregnancy induced hypertension defined as of blood pressure >140/90mm Hg after the 20 weeks of gestation in a previously normotensive mother.

Incidence of Preeclampsia in nulliparous population ranged from 3 to 10 % and in multiparas it varies and it is 1.4 to 4 %.<sup>[1,2]</sup> Incidence of eclampsia is 0.5 to 2% of all pregnancies. Thrombocytopenia defined by a platelet count <1,50,000/ $\mu$ L<sup>2</sup>. It is also defined as subnormal number of platelets in the circulating blood.<sup>[3]</sup> In pregnancy, it results from a variety of causes ranging from benign disorders such as

gestational thrombocytopenia to severe complicated life-threatening conditions such as HELLP syndrome. Thrombocytopenia resulting from pregnancy induced hypertension is responsible for approximately 20% of all cases of thrombocytopenia during pregnancy. In Preeclampsia, usually the thrombocytopenia is mild to moderate but patients with Eclampsia can develop severe thrombocytopenia and are more likely to have HELLP syndrome, which is a subset of Preeclampsia. Thrombocytopenia is a key and necessary component of this syndrome. Among the haematological abnormalities that occur in PIH thrombocytopenia is the most common. Its incidence being 11 to 29%.<sup>[4]</sup> It is a global problem and complicates approximately 10-17% of pregnancies. The incidence of PIH in India ranges from 5% to 15%.<sup>[5]</sup> Hemorrhage is an important factor in the etiology of maternal mortality and therefore, remains a major problem. Currently, there is no screening test that would help in identifying which pregnancy would be associated with PIH or assess its severity. A variety of haematological abnormalities may occur in women with PIH, out of which thrombocytopenia is the most common. Some investigators have proposed biochemical markers to predict the severity of PIH like Placental tissue protein 13 and Endoglin's; but these are not 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 in particular, those suitable at a rural setup. Thrombocytopenia carries a risk for both the mother and her fetus, associated with substantial maternal or neonatal morbidity & mortality. Therefore, it is of utmost importance to institute specific therapies promptly and improve the maternal and neonatal outcome. Hence, it is proposed to conduct this study to know the incidence of thrombocytopenia in pregnancy induced hypertension and its effect on maternal and fetal outcome.

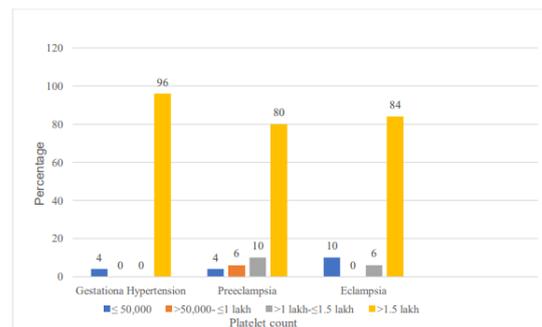
## MATERIALS AND METHODS

It was a cross-sectional study done in Mamata general hospital over a period of 18 months. Women were divided into 3 groups with a sample size of 30 in each group. Group 1 had mild PIH (gestational hypertension) which consisted of 30 women, Group 2 had severe PIH (preeclampsia) which consisted of 30 women and Group 3 had eclampsia which consisted of 30 women who have fulfilled the inclusion criteria and exclusion criteria. Women with mild, severe PIH and eclampsia, women who have given consent were included in the study. Pregnant

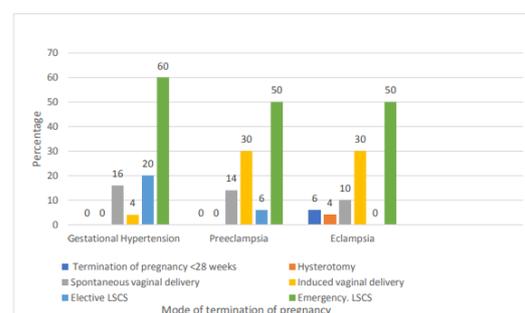
women with thrombocytopenia with other medical disorders, pregnant women with chronic hypertension and women who did not give consent were excluded from the study.

## RESULTS

In Gestational Hypertension, only 4 % of women had platelet count less than 50,000 and remaining 96 % of them had normal platelet count. In Preeclampsia, 4 % of women had less than 50,000 platelet count ,6 % of them had 50,000-1 lakh and 10 % had 1 lakh-1.5 lakhs of platelets. Remaining patients had normal platelet count. In Eclampsia group, 10 % of the women had platelet count less than 50000, 6% of them had platelet count in between 1 lakh- 1.5 lakhs. In Eclampsia group out of the 30 women 25(84%) women were with normal platelet count, in them 10(34%) of the babies born to these women had complications like neonatal sepsis, respiratory distress syndrome, intra ventricular haemorrhage, 10 (34%) babies had mortality and remaining 5 (16%) babies had no complications. Whereas 5(16%) women in thrombocytopenia group ,1 neonate with complication respiratory distress syndrome and remaining 4 fetuses born to these thrombocytopenic women had mortality.



**Figure 1: Distribution of women according to mississippi classification in relation to platelet count.**



**Figure 2: Distribution of women according to mode of termination in pregnancy**

**Table 1: Distribution of women according to their demographic details**

Age in years	Gestational hypertension (n=30), %	Preeclampsia (n=30), %	Eclampsia (n=30), %
16-20	0,0	4,14	15,50
21-25	15,50	16,53	12,40
26-30	11,36	9,30	1,3
31-35	4,14	1,3	2,7

Antenatal check ups	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Booked	25, 83	20,66	14,46
Unbooked	5,17	10,34	16,54
Literacy rate	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Illiterate	2,7	0,0	5,15
Primary School	8,26	10,34	10,34
High School	9,30	15,50	10,34
Intermediate	9,30	5,16	3,10
Degree	2,7	0,0	2,7
Locality	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Rural	15,50	17,57	20,66
Urban	15,50	13,43	10,34
Socioeconomic status	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Upper	12,40	8,27	2,7
Upper middle	6,20	12,40	6,20
Lower middle	8,27	4,13	12,40
Lower	4,13	6,20	10,33
Gravidity	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Primi	15,50	17,56	15,50
Multi	15,50	13,44	15,50
Gestational age in weeks	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
≤28	0,0	0,0	3,10
29-32	2,6	9,30	12,40
33-36	13,44	5,16	10, 34
≥37	15,50	16,54	5,16

**Table 2: Distribution of women according to obstetric complications, complications related to hypertensive disorders in pregnancy**

Obstetric Complications	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Anemia+IUGR	4,14	7,24	7,24
Oligohydramnios	8,26	3,10	3,10
Rh-ve pregnancy	0,0	1,3	0,0
Twin pregnancy	1,3	0,0	0,0
PROM	1,3	1,3	0,0
Overt/GDM	1,3	1,3	0,0
Breech	1,3	1,3	0,0
Prev LSCS	7,24	5,17	3,10
Peripartum cardio myopathy	0,0	1,3	1,3
Without complication	7,24	10,34	16,53
Complication	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Abruptio placenta	1,4	2,6	2,6
HELLP	0,0	1,4	2,6
Pleural effusion+ascites	0,0	3,7	0,0
Pulmonary edema	0,0	1,4	0,0
Pulmonary edema+maternal mortality	0,0	0,0	1,4
HELLP+maternal mortality	0,0	1,4	1,4
Without complications	29,96	22,75	24,80

**Table 3: Distribution of women according to mode of termination in pregnancy, indication for emergency LSCS and foetuses according to their outcomes.**

Mode of termination in pregnancy	Gestational hypertension (n=30), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Termination (<28 weeks)	0,0	0,0	2,6
Emergency hysterotomy	0,0	0,0	1,4
Spontaneous vaginal delivery	5,16	4,14	3,10
Induced vaginal delivery	1,4	9,30	9,30
Elective LSCS	6,20	2,6	0,0
Emergency LSCS	18,60	15,50	15,50
Without complications	29,96	22,75	24,80
Indication	Gestational hypertension (n=18), %	Preclampsia (n=15), %	Eclampsia (n=15), %
Prior LSCS	5,28	4,27	1,7
CPD	0,0	0,0	1,7
Placental abruption	0,0	0,0	2,13
Non reassuring fetal status	7,38	5,33	5,33
Abnormal Doppler	4,22	5,33	4,26
Thrombocytopenia	0,0	1,7	2,14
Maternal request	2,12	0,0	0,0
Foetal outcome	Gestational hypertension (n=31), %	Preclampsia (n=30), %	Eclampsia (n=30), %
Abortions	0,0	0,0	2,6
Live births	30,97	21,71	16,54
IUD	1,3	5,16	3,10

Still birth	0,0	1,3	3,10
Neonatal death	0,0	3,10	6,20

**Table 4: Distribution of babies according to birth weight, neonatal complications**

Birth weight	Gestational hypertension (n=31), %	Preeclampsia (n=30), %	Eclampsia (n=30), %
Less than 1 kg	0,0	4,13	7,24
1.1-1.5 kg	3,9	8,26	8,26
1.6-2 kg	3,9	9,30	7,24
2.1-2.5 kg	12,40	6,21	4,13
>2.5 kg	13,42	3,10	4,13
Complications	Gestational hypertension (n=30), %	Preeclampsia (n=21), %	Eclampsia (n=16), %
Neonatal sepsis	0,0	2,10	2,0
Respiratory distress syndrome	4,14	7,42	6,25
Neonatal jaundice	5,16	6,36	2,19
IVH	0,0	1,6	1,6
Without complications	21,70	5,6	5,50

**Table 5: Correlation of platelet count in relation to the maternal outcome**

Platelet count	Gestational Hypertension (n=30)			Preeclampsia (n=30)			Eclampsia (n=30)		
	Total	Favourable	Unfavourable		Favourable	Unfavourable		Favourable	Unfavourable
Normal	29 (96%)	28 (92%)	1 (4%)	24 (80%)	20 (66%)	4 (14%)	25 (84%)	23 (76%)	1 (4%), 1(4%) women with mortality
Thrombocytopenic	1 (4%)	1 (4%)	0	6 (20%)	3 (10%)	2 (6%), 1 (4%) women with mortality	5 (16%)	2 (6%)	2(6%), 1(4%) Women with mortality
	30			30			30		

**Table 6: Correlation of maternal platelet count with fetal outcome**

Platelet count in mother	Gestational Hypertension (n=30)	Fetal outcome		Preeclampsia (n=30)	Fetal outcome		Eclampsia (n=30)	Fetal outcome	
		Favourable	Unfavourable		Favourable	Unfavourable		Favourable	Unfavourable
Normal	29(96%)	19(63%)	9 ((29%), 1(4%) IUD	24(80%)	4(13%)	12(40%), 8(27%) fetuses with mortality	25(84%)	5(16%)	10(34%) ,10 (34%) fetuses had mortality
Thrombocytopenic	1(4%)	1+1(4%) Twin babies	0	6(20%)	1(4%)	4(12%), 1(4%) fetus with mortality	5(16%)	0	1(4%), 4 (12%) fetuses had mortality
	30			30			30		

## DISCUSSION

In the present study, 90 antenatal women were included and divided into three groups: Gestational Hypertension, Preeclampsia and Eclampsia. Each group comprised of 30 women, and their maternal and fetal outcome in relation to platelet count was studied. The study was aimed at knowing the frequency of thrombocytopenia in women with pregnancy induced hypertension (PIH), and the relation of platelet count in terms of maternal and their fetal outcome.

In this study in the Pre-eclampsia group there were no women with 24-28 weeks of GA was seen which is in contrast to the present study as most of the patients come only after 28 weeks for regular check-ups

where the disease process has already started. In our study, the incidence of IUGR in Preeclamptic patients was found to be 24% which is comparable to Meshram et al (19.14%).<sup>[6]</sup> HELLP syndrome may develop in the antenatal as well as postpartum periods. In the postpartum period, the time of onset ranges from a few hours to 7 days, but the majority of patients develop HELLP syndrome within 48 hours. Conservative treatment is recommended in order to delay the time of delivery. Prakash et al reported HELLP syndrome in 7.5% of cases of preeclampsia which is similar to the present study. In the Preeclampsia group, Abruption was seen in 6% of women. This is in contrast to the study by Jean Dupont Kemfang Ngowa et al,<sup>[7]</sup> where abruption was seen in 11% of women, and also to the study by Shahla Khosravi, Soheila Dabiran et al (20.2%).<sup>[8]</sup>

But it is Comparable , to the study by Xue-Jun Gao et al<sup>9</sup>, where abruption was seen in 4% of women. Preeclampsia is an important risk factor for abruption. Due to the increased BP recordings, vasoconstriction of the placental vessels causes abruption in preeclamptic women.

In the present study, HELLP was seen in 8% of women. This is comparable to the studies by Xue-Jun Gao et al (4%),<sup>[9]</sup> Shahla Khosravi, Soheila Dabiran et al<sup>8</sup> (4.9%), and the study by Jean Dupont Kemfang Ngowa et al<sup>7</sup>, where 1.8% of women had HELLP. In the present study, maternal mortality in preeclampsia women due to HELLP was seen in 4% of women. This is similar to the study by Nibitanga Gilbert and Hujifen,<sup>[10]</sup> where 4.3% of Burundian women had mortality. In Eclampsia group out of 30 women, 2 (6%) women had abruptio placenta, 2 had HELLP syndrome, 1 had maternal mortality due to pulmonary edema and another women died due to HELLP syndrome. In the present study, HELLP syndrome was observed in 10 % of the women both in Preeclampsia and Eclampsia groups which is similar to the study done by Rekha Sachan, Munna Lalpatel et al,<sup>[11]</sup> where HELLP syndrome was observed in 3.07% of patients in the Preeclampsia group and in 4.50% of patients in the Eclampsia group. In the study done by feroz sultana, the incidence of HELLP syndrome was 6%, which are consistent with that of Riaz et al. who reported an incidence of 5%. The incidence of maternal mortality in this study was 1% which well co-relates with the study results conducted by Shazia Riaz et al.<sup>[12]</sup> Most maternal complications were found in the Severe Preeclampsia group (25%) followed by in the Eclampsia (18%) and mild Preeclampsia groups (4%). There were 3 maternal deaths over all, only in the Eclampsia group comprising 8% of the women. In this study the overall maternal mortality rate was 6 % in all three groups which is in contrast to the study done by Rekha sachan, munna lalpatel where the overall maternal mortality rate was 2.8% of all the study cases. This is because in this study patients were referred from outside hospital when the disease process had already started and deteriorating, so mortality rate was more. In Gestational Hypertension, out of 30 women, only 1(4%) women had thrombocytopenia with platelet count 50,000-≤1 lakh in 6% (2) women, >1 lakh-≤1.5 lakhs were present in 10% (3) of women. In Eclampsia, 5(16%) women had thrombocytopenia out of 30 women.

This is in contrast to the present study done by Feroz sultana where Low platelet count was seen in 29.31% of cases with preeclampsia and in 44.44% of cases with eclampsia. The authors in their study have documented similar findings from India by Annam V et al, and Turkey by Yaprak EU et al.<sup>[13]</sup> The much higher occurrence of thrombocytopenia among severe preeclampsia and eclampsia patients in the present study can be explained by the poor socioeconomic status of the patients, leading to lack of antenatal check-ups and late presentation of women with preeclampsia to the hospital only after

developing severe systemic symptoms. In Gestational Hypertension, all 30 women had no abnormal LFT, RFT and coagulation profile, In Preeclampsia, only two women had abnormal RFT and LFT and among these 2 women, only one women had abnormal coagulation profile. In Eclampsia group also, 2 women had abnormal LFT, RFT and coagulation profile. Lactate Dehydrogenase (LDH) is deranged in 2 women in preeclampsia and 4 women of Eclampsia groups. Hyperuricemia was found in 4 patients, out of 90 women in our study. In normal pregnancy, serum uric acid level decreases (2.5–4.5 mg/dL) due to plasma volume expansion. In Gestational Hypertension group, Term women were 54% and Preterm were 46 %. In Preeclampsia group Term women were 46 % and preterm were 54 %, Where as in Eclampsia group preterm were 83 % and Term were 17 %. It has been previously suggested that Preterm Eclampsia has more serious maternal and fetal consequences than eclampsia at term and that eclampsia is less severe when it develops postpartum in a study done by K A Douglas, C W G Redman 80, Almost more than half (80% (25)) of the cases presented preterm (before 37 completed weeks of gestation) and over a fifth (20% (5)) developed before 31 weeks which is similar to present study where 83 % of women in Eclampsia group presented at Pre Term. The type of Eclampsia was closely associated with gestational maturity. Most of the antepartum convulsions occurred preterm; most of those that were intrapartum or postpartum presented at Term. In Gestational Hypertension group, out of 30 women, 6 had spontaneous vaginal delivery, 1 had induced vaginal delivery, 6 had elective LSCS, and 18 of them underwent emergency LSCS. Among 18 women who had emergency LSCS, 5 had emergency LSCS in view of prior LSCS, 7 cases due to non-reassuring fetal status, 4 of them had section due to abnormal doppler and lastly 2 were done due to maternal request. In Preeclampsia group, out of 30 women, 13 (44%) of the women delivered by vaginal route (either induced or spontaneous) and 17 (56%) underwent caesarean section (50 %-Emergency, 6 %-Elective) Similar findings are found in the study by Nibitanga Gilbert and Hujifen where the rate of LSCS was higher in both Burundian and Chinese women (89.1% and 86.1% respectively) and the rate of vaginal delivery was less (10.9% and 13.9% respectively). Yücesoy, G, et al, in their study noted that 58.8% underwent caesarean section and Delivery route was vaginal in 41.2%, with the most frequent indication for LSCS being fetal distress and abnormal doppler in 15 % of the women.<sup>[14,15,16,17,18]</sup> These were similar to the present study. This is in contrast to the study by Rekha Sachan, Munna Lal Patel et al,<sup>[11]</sup> where 62.3% of the women had vaginal delivery and 37.7% had LSCS. In the study by Jagannath Pairu, Bharathi KN et al,<sup>[15]</sup> where majority, that is 89 women out of 120 women(74.1%) with severe Preeclampsia had vaginal delivery and 31 women (25.9%) had caesarean section. In another study by

Manjusha Viswanathan, Suja Daniel,<sup>[16]</sup> majority of the cases had vaginal delivery and only a few had caesarean section. These are in contrast to the present study because most of the women in this study were referred from outside hospital and in benefit of mother and fetus more number of LSCS were done. In Eclampsia group, out of 30 cases, 2 were induced abortions because they presented with seizures below 28 weeks of gestation age. 12 women delivered vaginally out of them 3 women delivered spontaneously, and remaining 9 cases were induced and they delivered vaginally. Out of 30, In 16 cases emergency section was done including 1 emergency Hysterotomy. Emergency Hysterotomy was done in a primi with 27+3 days of gestational age with platelet count 45,000 and her RFT, LFT and coagulation profile were deranged and referred from outside hospital in view of Eclampsia and abnormal PIH profile and oliguria, where inspite of induction for termination of pregnancy, her cervix was unfavourable, so emergency hysterotomy was done. Out of the Emergency LSCS, i.e 15 women, 5 were done due to NRFS, 4 cases were done due to abnormal doppler, 2 cases were done due to thrombocytopenia 1 due to previous LSCS, 2 due to placental abruption and 1 of them had CPD and underwent LSCS. But a higher incidence of cesarean section was observed with increasing gestational age, probably because of better fetal outcome and fetal survivability. There is no statistical significance. In a study done by Dr Vinodhini, Dr. Lavanya kumari<sup>18</sup> Mode of delivery by caesarean section was 58% in the test group (Preeclampsia and Eclampsia patients) and 26% in the control group, vaginal delivery was 42 % in the test group and 74 % in the control group. These findings were similar to present study. In Gestational Hypertension, Total women were 30, As one women delivered twins total fetuses were 31. Out of 31 fetuses 1 was IUD, and remaining 30 fetuses were alive. In Preeclampsia, 30 fetuses were born. 21 fetuses were live born, 5 fetuses had IUD (intra uterine death) among them 4 were delivered vaginally and one women with IUD had previous LSCS underwent Emergency LSCS in view of Severe Pre-Eclampsia. 1 fetus had still birth and 3 of them fetus had neonatal death. In Eclampsia group, 28 fetuses were born and 2 were induced abortions. Among the 28 babies, 3 were IUD, 3 still births, 6 neonatal deaths and 16 live births. Preterm Eclampsia occurred more commonly in the antepartum period and was associated with more maternal complications and fetuses with small for gestational age, as well as higher rates of stillbirth and neonatal mortality. In this study, In Preeclampsia group 3 % of still borns and In Eclampsia 10 % of still borns were present which is comparable to the study done by KA Douglas and C W G Redman where 15.60% of still born babies in severe preeclampsia, and 31.10 % of still borns in eclampsia group were found and the rate of still birth and neonatal deaths were 22.2/1000 and 34.1/1000 respectively. Fetal and neonatal outcomes

was measured in terms of prevalence of intrauterine growth restriction, low birth weight, Apgar score, the need for resuscitation and/or admission to a neonatal intensive care unit and stillbirths and neonatal deaths. Incidence of intrauterine growth restriction was found in 15.50% of births 58 % low birth weight was seen in Gestation Hypertension, 90 % low birth in Preeclampsia and 87 % low birth in Eclampsia group. There were no neonatal deaths in Gestational Hypertension group. In Preeclampsia 10 percent neonatal deaths and In Eclampsia 20 percent neonatal deaths, were seen. Most of the Neonatal deaths occurred in eclampsia group. Yadav et al<sup>84</sup> reported preterm deliveries in 28.8%, stillbirths in 4.8% and 14.8% over all perinatal mortality. These findings are similar to the present study Perloff et al,<sup>[17]</sup> reported that perinatal mortality in Preeclampsia is five times higher than normal perinatal mortality and this increases to 20% in infants of women with Eclampsia. It is similar to present study. In Gestational Hypertension group, Total 31(100 %) babies (1 mother had twins , so 31 babies) had apgar less than 7 at 1 minute and 12(38%) babies had less than 7 and 19(62%) babies had more than 7 at 5 minute apgar. In Preeclampsia group, out of 30 babies, 29(96%) babies had apgar less than 7 and 1(4%) baby had apgar >7 at 1 minute and 15 babies had apgar less than 7 and remaining 15 babies had apgar >7 at 5 minutes. In Eclampsia group also, out of 30 fetuses 29(96%) had apgar less than 7 and 1(4%) fetus had apgar > 7 at 1 minute and 22(74%) had apgar 7 at 5-minute apgar. In this study 62 % of neonates born to women in the HDP group had an apgar score < 7 compared with 6.45% in the Gestational Hypertension group. Further, 28.8% of neonates born to women in the HDP groups required resuscitation and 20.3% required hospital admission compared with only 6.5% in the control group. In Gestational Hypertension there were 31 fetuses: 1 twins and remaining all singletons. Among these fetuses 3 (9%) weighed less than 1500 g, and 3 (9%) weighed between 1600 and 2000 g, 12 (40%) weighed between 2100-2500 g and 13(42%) weighed greater than 2500 g. In Preeclampsia there were 30 fetuses: All of them were singleton, 4 weighed less than 1 kg, 8 weighed between 1100 and 1500 g, 9 weighed between 1600 and 2000 g, 6 weighed between 2100 and 2500 g and 3 weighed more than 2500 g In this study, In Preeclampsia group 90 % of foetuses were < 2.5 kg, which is comparable with the study done by Rekha sachan, Munna Lalpatel,<sup>[11]</sup> were 90 % of their foetuses also were 2500 g. In this study, In eclampsia group, only 13 % of fetuses were > 2500 gm in contrast to study done by Rekha sachan, Munna Lalpatel,<sup>[11]</sup> where 65% (30) were >2500 g. This is because around 24 % of women in eclampsia group had anaemia with IUGR with correlates with fetal weight and also 73 % in this group belong to lower socio-economic class. Where as in the study done by Rekha sachan most of the women were from higher socioeconomic class which coincides with good fetal weight.<sup>[11]</sup> Among 31 babies in Gestational

Hypertension, 30 were live born and among them only 9 babies had neonatal complications out of which 4 had Respiratory distress syndrome and 5 had neonatal jaundice 21 babies had no complications. In Preeclampsia, out of 30 babies, 21 were live born among them 2 had neonatal sepsis, 7 had respiratory distress syndrome, 6 had neonatal jaundice, 1 had IVH and 5 were without complications. In Eclampsia out of 30 babies, 16 were live born, among them 11 babies had neonatal complications like - respiratory distress syndrome (6), neonatal jaundice (2), neonatal sepsis(2), IVH (1) and 5 had no complications. In study done by Rekha sachan, Munna lalpatel<sup>11</sup> neonatal complications in Gestational Hypertension, Preeclampsia and Eclampsia group were seen in 8,7,9 babies respectively, whereas in present study neonatal complications were seen in 9, 16, 11 babies in 3 groups respectively. This is in contrast to present study. This is because most of the babies in Eclampsia group had IUD and still births. In Gestational Hypertension group out of 30 women, 29 women had normal platelet count and 1 women had thrombocytopenia. Out of 29 women with normal platelet count, 1 women had abruptio placenta. she was G3P1L1 with prev LSCS with IUD, she delivered vaginally. weight of the baby was 2.4 kg. Among 1 women with thrombocytopenia where platelet count was 40,000 with twin gestation, no complications were seen and Emergency LSCS was done.

In Gestational Hypertension group, Incidence of thrombocytopenia was low (4%) and maternal outcome was good and there was no association between maternal outcome and thrombocytopenia. In Preeclampsia group out of 30 women, 24 women had normal platelet count and 6 women had thrombocytopenia. Among 24 women with normal platelet count, 4 had complications: Among them 3 had pleural effusion and ascites and 1 women had peripartum cardiomyopathy. Out of three women with ascites and pleural effusion, 2 of them underwent emergency LSCS in view of deteriorating maternal condition at 36 weeks+5 days and 30 weeks gestation age respectively. And in another women with pleural effusion and ascites induction was done at 33weeks+3 days of gestation age and she delivered vaginally. In women with thrombocytopenia, out of 6 women, 3 had no complications 2 had complications among them one had pulmonary edema and another had HELLP syndrome and another women died due to HELLP followed by MODS. The women with HELLP syndrome, she was a primi with 36weeks + 6 days of gestation age her LFT, RFT and coagulation profile were deranged and with a platelet count of 1.02 lakhs. She was induced and delivered vaginally. In another women with pulmonary edema Emergency LSCS was done at 36 weeks in view of severe Preeclampsia where platelet count was 1.21 lakhs. On 4th POD she developed rectus sheath hematoma, which was evacuated and immediate post op period she developed severe pulmonary edema, she was on ventilator and was revived. Another 3

women had low platelet count of 90000, 90000, 1.2 lakhs at 40, 35 and 36 weeks of GA respectively. One women had Emergency LSCS in view of fetal distress, in another Em. LSCS was done in view of abnormal doppler and one women delivered vaginally. In Preeclampsia group, incidence of thrombocytopenia is 20%. Maternal outcome in terms of morbidity is not directly proportional to thrombocytopenia because only 6 % of women with thrombocytopenia were affected. In all thrombocytopenic mothers (6 women) duration of pregnancy is reduced thereby suggesting early delivery as prompt treatment of the disease and preventing complications. Higher operative intervention was seen in group with low platelet count group due to deteriorating maternal condition. Lowering of the platelet count increases the severity of maternal complications. In Eclampsia group out of 30 women, 25 had normal platelet count and 5 had thrombocytopenia. Among the women in normal platelet count group, one had complication i.e., peripartum cardiomyopathy (PPCM) and another women died due to pulmonary edema. The women with PPCM she developed this complication post op and she recovered. Among 5 women with thrombocytopenia, 2 had no complications and 2 had HELLP and 1 had mortality. The women with HELLP syndrome was with 27weeks +3days of GA and referred from outside hospital with oliguria and deranged LFT and RFT and in view of failed induction and deteriorating maternal condition, emergency hysterotomy was done. The other women with HELLP syndrome had, 50,000 platelet count, was with 31 weeks+ 6 days gestation age and in view of fetal Distress Emergency LSCS was done. And in remaining 2 women platelet count was 1.5 lakhs, 1.4 lakhs respectively. Among these 2 women, one delivered by Emergency LSCS and another by vaginal delivery which was induced.

## CONCLUSION

In the present study, most of the pregnant women who presented with severe Preeclampsia and Eclampsia had thrombocytopenia. Simple and routine tests like complete blood picture and platelet count are highly helpful in suspecting a derangement in the coagulation status early in the course of the disease and plan preventive management strategies. HELLP was the common complication seen among thrombocytopenic mothers. The degree of thrombocytopenia is correlated well with the severity of the maternal complications. But, in relation to fetal outcome it depends on the gestational age of mother i.e, if they presented at early weeks of gestation age with the complications like HELLP, fetus will have bad outcome which is indirectly correlated with fetal outcome. Hence proper monitoring of platelet count and timely termination of pregnancy improves perinatal outcome and reduces maternal morbidity and mortality.

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