

## A RETROSPECTIVE STUDY OF FETOMATERNAL OUTCOME IN WOMEN WITH HEMOLYSIS, ELEVATED LIVER ENZYMES AND LOW PLATELET COUNT SYNDROME

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### Abstract

**Introduction:** Hemolysis, Elevated Liver Enzymes, Low Platelet count (HELLP) syndrome is a potentially life-threatening condition manifesting in the context of preeclampsia, which poses challenging diagnostic and management issues to the clinician. Its incidence is reported as 0.5-0.9% of all pregnancies and 10-20% of women with severe pre-eclampsia and causes significant mortality and morbidity, which increases with the severity of the syndrome.

**Materials and methods:** This is a retrospective study carried out in the Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand from January 2023 to December 2023. The inclusion criteria were those who were diagnosed to have partial or complete HELLP syndrome. The exclusion criteria were women diagnosed with AFLP, chronic liver diseases, viral hepatitis, immune thrombocytopenia and renal diseases.

**Results:** During the study period, there were a total of 7,566 deliveries. Among them, 1,139 women had hypertension complicating pregnancy. A total of 126 cases of HELLP syndrome were diagnosed. Of total deliveries, 1216 (8%) had preeclampsia. 98 (77.78%) women with preeclampsia developed HELLP syndrome. The mean age was 29.5 years. 52 women (41.2%) were in the age group of 26-30 years. A total 60 (47.6%) patients were admitted with HELLP syndrome at less than 34 weeks of gestation. 2 women with gestational age less than 28 weeks (Table 1). HELLP syndrome was seen in 62 (49.2%) primigravida and 64 (50.7%) multigravida, almost same. There were 6 cases of twin pregnancy. All were booked cases, but 34 (26.98%) women had irregular ANC.

**Conclusion:** HELLP syndrome is an alarming complication, which brings high maternal and perinatal morbidity and mortality. The termination of pregnancy is the definitive treatment for HELLP Syndrome and it should be treated only in a tertiary care center, as it needs a multidisciplinary team approach work by the obstetrician, pediatrician, physician, transfusion medicine specialist, anaesthesiologist etc.

**Key Words:** Hemolysis, Elevated Liver Enzymes, Low Platelet count, maternal and perinatal morbidity and mortality.

## INTRODUCTION

Hemolysis, Elevated Liver Enzymes, Low Platelet count (HELLP) syndrome is a potentially life-threatening condition manifesting in the context of preeclampsia, which poses challenging diagnostic and management issues to the clinician. Its incidence is reported as 0.5-0.9% of all pregnancies and 10-20% of women with severe pre-eclampsia and causes significant mortality and morbidity, which increases with the severity of the syndrome.<sup>1</sup>

HELLP is a complication due to hepatic ischemia, giving rise to periportal hemorrhage and necrosis along with microangiopathic haemolytic anemia and thrombocytopenia. HELLP syndrome is rapid onset and is typically seen in patients with severe pre-eclampsia, although it can occur in the absence of pre-eclampsia in 10 % of the cases. Excessive weight gain and generalized edema precede the syndrome in more than 50% of the cases.<sup>2</sup>

The incidence of subcapsular liver hematoma was 1.6 percent. Other complications included eclampsia-6 percent, placental abruption-10 percent, acute kidney injury-5 percent, and pulmonary edema-10 percent.<sup>3</sup> Other serious complications included stroke, coagulopathy, acute respiratory distress syndrome, and sepsis. The risk of recurrence of HELLP syndrome is 24% after the index pregnancy.<sup>4</sup> In the study by Chawla et al found that 0.45% of the patients admitted for delivery developed HELLP syndrome and majority of the patients developed the condition in 30-36 weeks period of gestation, while five patients developed it in the postpartum period.<sup>5</sup>

This study was undertaken with the objective to assess the prevalence, severity and complications of HELLP syndrome and to evaluate the maternal and fetal outcome in pregnancies complicated with HELLP syndrome.

## MATERIALS AND METHODS

This is a retrospective study carried out in the Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand from January 2023 to December 2023.

**Inclusion criteria:** The inclusion criteria were those who were diagnosed to have partial or complete HELLP syndrome.

**Exclusion criteria:** The exclusion criteria were women diagnosed with AFLP, chronic liver diseases, viral hepatitis, immune thrombocytopenia and renal diseases.

The maternal parameters assessed were age, parity, gestational age, booking status, blood pressure, liver function tests, renal function tests, platelet count, presence of proteinuria, mode of delivery, need of blood transfusion and maternal complications like abruption, eclampsia, renal failure, sepsis and maternal mortality. Baby details included birth weight, Apgar, live or dead, presentation, prematurity and perinatal mortality. The gestational age of the pregnancy was determined from the last menstrual period or early sonography. The diagnosis and classification

of HELLP syndrome were made using the criteria-complete or partial HELLP depending on the components involved and Mississippi classification -i.e., abnormal peripheral blood smear with evidence of haemolysis, raised lactic dehydrogenase (LDH) (>600 U/L), elevated liver enzymes [increased plasma aspartate amino transferase (AST) (70 U/L), and low platelets (platelet count less than 1.5lakh). Other associated complications in the mother and the perinatal outcome in terms of the intrauterine fetal demise, preterm delivery and Apgar were also noted. The clinical data included blood pressure, signs of impending eclampsia (headache, blurring of vision, epigastric pain), while the laboratory investigations recorded were serial measurement of complete blood cell count, liver function tests (S bilirubin, ALT, AST), and renal function tests (B urea, S creatinine). The study started after getting ethical clearance. The descriptive data presented as number and percentages with mean using excel sheet.

## RESULTS

During the study period, there were a total of 7,566 deliveries. Among them, 1,139 women had hypertension complicating pregnancy. A total of 126 cases of HELLP syndrome were diagnosed. Of total deliveries, 1216 (8%) had preeclampsia. 98 (77.78%) women with preeclampsia developed HELLP syndrome. The mean age was 29.5 years. 52 women (41.2%) were in the age group of 26-30 years.

Gestational age (weeks)	Number	Percentage
<28 weeks	2	1.59
28-34 weeks	58	46.03
34-37 weeks	64	50.79
>37 weeks	2	1.59

Table 1: Gestational Age

A total 60 (47.6%) patients were admitted with HELLP syndrome at less than 34 weeks of gestation. 2 women with gestational age less than 28 weeks (Table 1). HELLP syndrome was seen in 62 (49.2%) primigravida and 64 (50.7%) multigravida, almost same. There were 6 cases of twin pregnancy. All were booked cases, but 34 (26.98%) women had irregular ANC.

Platelet (lakh)	Number	Percentage
<0.5	4	3.18
0.5-1	20	15.87
1-1.5	30	23.8
>1.5	72	57.15

Table 2: Platelet count

A total 28 (22.2%) cases were having normal blood pressure. Majority of them, 98 patients (77.78%) had severe pre-eclampsia. Maximum blood pressure recorded was 210/110 mmHg.

Bilirubin (mg %)	Number	Percentage
<1.2	56	44.44
1.2-4	66	52.38

>4	4	3.18
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**Table 3: Bilirubin value**

Birth weight (kg)	Number	Percentage
<1	26	19.7
1-1.5	34	25.76
1.5-2	36	27.27
2-2.5	22	16.67
>2.5	14	10.6

**Table 4: Birth weight**

Of these 63 patients, 11 (17.46%) women required blood transfusion - including packed red cells, fresh frozen plasma, platelets, 6 (9.5%) women required 2 pint packed red cells, 3 required 3 pint packed red cells, 2 pint fresh frozen plasma and 2 platelets, 1 (1.58%) required 1 pint packed red cell and 1 required 5 pint packed red cell, 4 fresh frozen plasma and 2 platelets. 33 patients (52.3%) underwent caesarean section and the common indications were previous CS and fetal distress.

Neonatal outcome	Number	Percentage
Intrauterine fetal demise	24	48
Low Apgar (<7)	16	32
Neonatal death	10	20
Total	50	100

**Table 5: Fetal complications**

Maternal complications	Number	Percentage
Abruption	10	27.78
Acute renal failure	6	16.67
DIC	6	16.67
Sepsis	4	11.11
Postpartum hemorrhage	4	11.11
Eclampsia	4	11.11
Death	2	5.55
Total	36	100

**Table 6: Maternal complications**

Overall perinatal mortality was 25.76%. There were 10 (27.78%) cases of abruption, of which one was grade 3A abruption, 6 (16.67%) women with acute renal failures - two underwent dialysis and one patient conservatively managed. 6 (16.67%) women had DIC, 4 (11.11%) women had sepsis, 4 (11.11%) cases of postpartum hemorrhage and 4 (11.11%) women had antepartum eclampsia. Two maternal death among 126 women, death was due to DIC and sepsis, she had complete HELLP.

## DISCUSSION

HELLP syndrome is a life-threatening complication, considered to be a severe variant of hypertension in pregnancy, which is one of the major causes of a higher rate of maternal and perinatal morbidity and mortality.<sup>6</sup>

The incidence of HELLP syndrome in this retrospective study is 0.84% (126 cases) as compared to 0.45% (24) in the study by Chawla et al and 0.2% (71) in the study by Campos et al. This is based on the total number of deliveries. In this study, 8% (1216) had preeclampsia and 77.78% (98) of women with preeclampsia developed HELLP syndrome, but in the study by Campos et al, HELLP syndrome diagnosed only in 28% of severe preeclampsia and similarly in the study by Pampus et al only 13.18% of severe preeclampsia developed HELLP syndrome.<sup>7</sup>

In this study, mean age was 29.5 years and majority, 41.2% (26 women) were in the age group 26-30 years as compared to the study by Chawla et al mean age was 24.25 years and in the study by Campos et al the mean age was 31 years and 33.3% with age more than 35 years. In this study, 47.6% (60) patients were admitted with HELLP syndrome at less than 34 weeks of gestation and 49.2% (62) primigravidae and 50.7% (64) multigravida.<sup>8</sup> All were booked cases, but 26.98% (34) women had irregular ANC. There were 68.3% of nulliparous in the study by Campos et al. 42% with gestational age less than 32 weeks in the study by Gasem et al and 73.3% between 32-38 weeks in the study by Kota et al.<sup>9</sup>

In this study, all (126) were antenatal cases and among them, 79.3% (100) had partial HELLP and 20.7% (26) had complete HELLP as compared to 64% were antenatal cases in the study by Fitzpatrick et al and 70% antenatal cases in the study by Sibai et al. In the study of Haddad et al 22% (82) required blood transfusion as compared to 17.46% (22) women in this study. 52.3% (66) underwent caesarean section in this study which was lower than 91% CS in the study by Fitzpatrick et al. In the study of Fitzpatrick et al 50% (65) had platelet count of less than 50,000 as compared to only 3.18% (2) had platelet count less than 50,000.<sup>10</sup>

## CONCLUSION

HELLP syndrome is an alarming complication, which brings high maternal and perinatal morbidity and mortality. The termination of pregnancy is the definitive treatment for HELLP Syndrome and it should be treated only in a tertiary care center, as it needs a multidisciplinary team approach work by the obstetrician, pediatrician, physician, transfusion medicine specialist, anaesthesiologist etc.

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