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Clinical Study of HELLP Syndrome and It's Outcome at Pravara Rural Hospital, Loni

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Abstract

Background: HELLP syndrome, a severe pregnancy complication characterized by hemolysis, elevated liver enzymes, and low platelet count, occurs in 0.5 to 0.9% of all pregnancies and in 10–20% of severe preeclampsia cases. It poses significant risks to both mother and fetus, presenting diagnostic and therapeutic challenges. Patients often experience epigastric or right upper quadrant pain, hypertension, proteinuria, fatigue, nausea, vomiting, sudden weight gain, and headaches. HELLP syndrome typically occurs in the second and third trimesters (27-37 weeks) and 15–30% of cases present postpartum. The exact causes remain unclear but may involve placental origins, autoimmune factors, gene mutations, or fatty acid oxidation disorders. ***Aims and Objectives:*** To analyze the clinical profile of HELLP syndrome cases and to assess maternal and perinatal outcomes, including morbidity and mortality. ***Material and Methods:*** This prospective cross-sectional study was conducted in the Obstetrics and Gynecology department at Pravara Rural Hospital, Loni, involving 45 patients with severe preeclampsia and eclampsia above 28 weeks of gestation diagnosed with HELLP syndrome. Patients were admitted to the ICU, and detailed histories and examinations were recorded. Patients were divided into two groups: those with HELLP syndrome (Group A) and those without (Group B). ***Results:*** Group A had a higher representation in the 20-22 age bracket, while Group B had more members aged 22-24. Cesarean sections were more common in Group A, whereas vaginal deliveries were more frequent in Group B. Blood pressure readings were higher in Group A. Maternal complications, such as abruption placentae, DIC, hepatic infarction, acute renal failure, and ascites, were more frequent in Group A, as were neonatal complications like IUGR, preterm delivery, neonatal thrombocytopenia, and RDS. ***Conclusion:*** The study reveals significant differences between patients with and without HELLP syndrome. Group A included younger patients, more first-time mothers, and a higher incidence of complications and mortality. These findings highlight the need for tailored management strategies for severe preeclampsia/eclampsia, especially in those with HELLP syndrome, to improve maternal and neonatal outcomes.

Keywords: HELLP Syndrome, Severe Preeclampsia, Maternal Complications, Neonatal Outcomes.

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INTRODUCTION

In 1982, Louis Weinstein created the acronym HELLP (H = Haemolysis, EL = Elevated Liver enzymes, LP = Low Platelets) syndrome, which stands for hepatitis E, leukemia, and lymphoma [1]. Definition, diagnosis, occurrence, etiology, and therapy of HELLP syndrome are all hotly contested areas of study. In 1985, a research by Sibai B M *et al.*, found a 9.7% incidence of HELLP [2]. Another research published in 1993 found that 20% of women with pre-eclampsia had the condition. Another research found a 3% higher risk of maternal mortality (1% overall) [3]. The HELLP syndrome is a serious complication in pregnancy characterized by hemolysis, elevated liver enzymes and low platelet count occurring in 0.5 to 0.9% of all pregnancies and in 10–20% of cases with severe preeclampsia [4]. The diagnosis of HELLP syndrome may become very challenging because the patients may present with vague symptoms like nausea, vomiting, headache, malaise or flu-like symptoms. This leads to misdiagnosis of HELLP syndrome with various mild conditions like viral hepatitis to serious life-threatening conditions like acute fatty liver of pregnancy [5]. The HELLP syndrome, a serious condition in its complete form, is associated with substantial risk for the mother and her fetus [6, 7].

This study was undertaken with the objective to ascertain the presentation, diagnosis, severity, and complications of HELLP syndrome and evaluate the maternal and fetal outcome.

Aims and Objectives

- To analyze the clinical profile of HELLP syndrome cases and to assess maternal and perinatal outcomes, including morbidity and mortality.

MATERIAL AND METHODS

The study was conducted in the Obstetrics and Gynecology department at Pravara Rural Hospital, Loni, involving patients with severe preeclampsia and eclampsia above 28 weeks of gestation diagnosed with HELLP syndrome. This prospective cross-sectional study spanned two years, including a sample size of 45 patients selected through purposive sampling. Inclusion criteria were patients from the gynecology department at PRH, Loni, aged over 20 years, with no other comorbidities, and a gestational age over 28 weeks. Patients meeting the laboratory criteria for HELLP syndrome, such as elevated lactate dehydrogenase (>600 IU/L), SGOT (AST) (>70 IU/L), SGPT (>70 IU/L), and platelet count (<100,000/mm³), were admitted to the intensive care unit. Detailed histories and examinations were recorded, and patients were divided into two groups: those with severe preeclampsia/eclampsia with HELLP syndrome (HELLP Group) and those without HELLP syndrome (NON-HELLP Group).

The methodology involved collecting comprehensive data on patient histories, symptoms, and signs of severe preeclampsia and imminent eclampsia, followed by thorough general and obstetric examinations. Observations included weight, albuminuria, blood pressure, hemoglobin levels, platelet count, peripheral smear, serum bilirubin, SGOT, SGPT, prothrombin time (PT), international normalized ratio (INR), serum fibrinogen, serum lactate dehydrogenase (LDH), blood urea, serum uric acid, serum creatinine, and activated partial thromboplastin time (APTT). These parameters were essential for assessing the clinical profile and outcomes of the patients.

All data was collected and compiled in Microsoft excel and was analysed by applying appropriate statistical tests. T test for quantitative data and chi square for qualitative data.

RESULTS

The patients were divided into 2 groups

Group A: Severe Preeclampsia / Eclampsia with HELLP syndrome (HELLP Group)

Group B: Severe Preeclampsia / Eclampsia without HELLP syndrome (NON-HELLP Group)

- Distribution depending on family history of pre eclampsia

Family history	Group A	Group B
Yes	7	1
No	18	24
Total	25	25

In Group A, 7 members report having a family history, whereas only 1 member in Group B has a similar background. Conversely, the majority of members in both groups do not have a family history, with 18 in Group A and 24 in Group B.

- Distribution depending on mean laboratory findings

Laboratory findings	Group A		Group B	
	Mean	SD	Mean	SD
Hb%	8.9	1.2	9.2	1.8
LDH (U/l)	789	23.2	564	12.3
Total bilirubin (mg/dl)	3.6	1.1	1.5	0.4
AST(u/l)	102.3	45.8	76.3	24.5
ALT(u/l)	98.7	36.3	61.2	18.4

The mean hemoglobin percentage (Hb%) is slightly lower in Group A (8.9 ± 1.2) compared to Group B (9.2 ± 1.8). Lactate dehydrogenase (LDH) levels are significantly higher in Group A, with a mean of 789 U/l (SD 23.2), while Group B has a mean of 564 U/l (SD 12.3). Total bilirubin levels are more than double in Group A (3.6 ± 1.1 mg/dl) compared to Group B (1.5 ± 0.4 mg/dl). Aspartate aminotransferase (AST) levels are elevated in Group A (102.3 ± 45.8 u/l) relative to Group B (76.3 ± 24.5 u/l). Similarly, alanine aminotransferase (ALT) levels are higher in Group A (98.7 ± 36.3 u/l) compared to Group B (61.2 ± 18.4 u/l).

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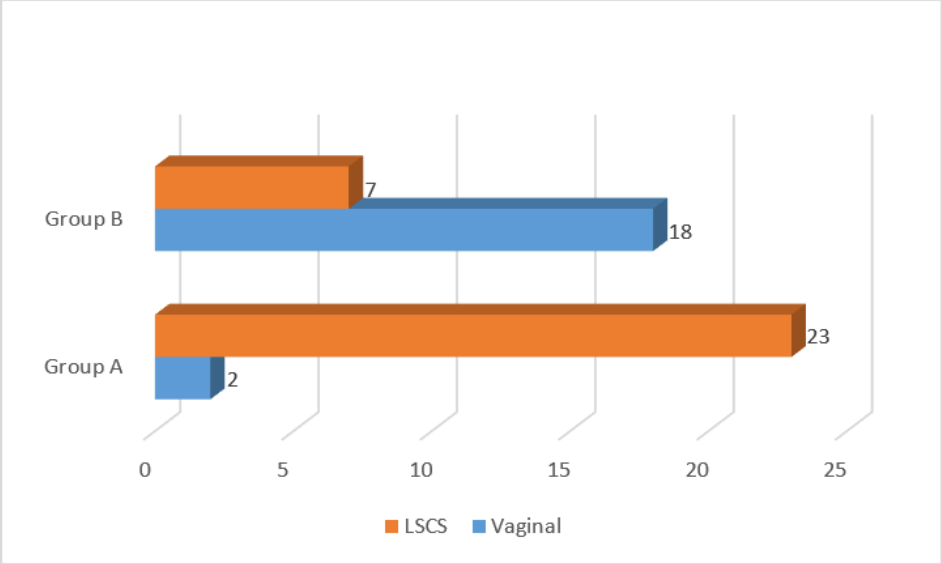

Figure 1: Distribution depending on mode of delivery

In Group A, the majority of deliveries were via lower segment cesarean section (LSCS), with 23 members undergoing this procedure, and only 2 having vaginal deliveries. In stark contrast, Group B had a higher number of vaginal deliveries, with 18 members, while only 7 underwent LSCS.

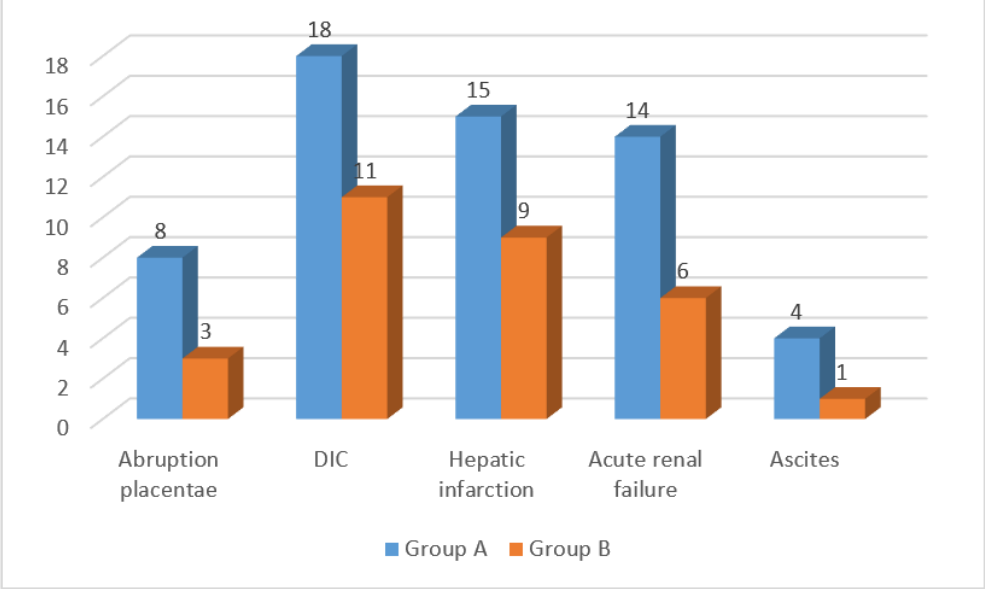

Figure 2: Distribution depending on maternal complication

- Distribution depending on neonatal complication

Neonatal complication	Group A	Group B
IUGR	20	14
Preterm delivery	22	12
Neonatal thrombocytopenia	15	6
RDS	11	2

Intrauterine growth restriction (IUGR) is more common in Group A, with 20 cases compared to 14 in Group B. Preterm delivery is also higher in Group A, with 22 cases versus 12 in Group B. Neonatal thrombocytopenia is significantly more prevalent in Group A, with 15 cases, while Group B has 6. Respiratory distress syndrome (RDS) is reported in 11 neonates in Group A, compared to only 2 in Group B.

DISCUSSION

In present study In Group A, 7 out of 25 patients had a family history of preeclampsia, whereas only 1

patient in Group B reported a similar background. The majority in both groups did not have a family history, with 18 patients in Group A and 24 in Group B. Study by Mallesara A *et al.,* [8] showed that out of 38 patients 7 had family h/o of pre eclampsia and 31 had no family h/o pre eclampsia. Whereas in remaining 282 patients without HELLP syndrome 26 0f they had family h/o pre eclampsia.

In present study Group A exhibited a slightly lower mean hemoglobin percentage (8.9 ± 1.2) compared to Group B (9.2 ± 1.8). Lactate dehydrogenase (LDH) levels were notably higher in Group A (789 U/l, SD 23.2) than in Group B (564 U/l, SD 12.3), indicating more pronounced hemolysis. Total bilirubin levels were markedly elevated in Group A (3.6 ± 1.1 mg/dl) compared to Group B (1.5 ± 0.4 mg/dl). Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) levels were also higher in Group A (102.3 ± 45.8 u/l and 98.7 ± 36.3 u/l, respectively) than in Group B (76.3 ± 24.5 u/l and 61.2 ± 18.4 u/l, respectively), indicating more severe liver involvement.

Study by Anitha GS *et al.,* [9] showed that majority 71.4% had Hb >7, 55.3% had bilirubin >1.2 mg/dL. Study by Mallesara A *et al.,* [8] showed that Hb% is markedly decreased with significant rise in LDH and liver enzymes. Study by Irrinki VJ, *et al.,* [10] showed that mean platelet count and reticulocyte count in our study was found to be 1.48 lakhs/cc 3 and 89600/cc 3, respectively and mean bilirubin was found to be 3.42 mg/dL, mean AST was found to be 152.59 micrograms per litre, mean ALT was found to be 149.94 micrograms per litre and mean LDH levels were found to be 1022 micrograms per litre.

In present study Group A predominantly underwent lower segment cesarean section (LSCS), with 23 patients opting for this procedure, while only 2 had vaginal deliveries. In contrast, Group B had a higher incidence of vaginal deliveries (18 cases) compared to LSCS (7 cases), reflecting potentially less severe maternal complications. Study by Chidanandaiah SK *et al.,* [4] showed that of 80 patients of HELLP syndrome 19 delivered by LSCS and 61 delivered vaginally and showed that ascites (26.25%), PPH (25%) and placental abruption (22.5%) were the most common maternal complications in HELLP syndrome followed by acute renal failure (18.75%), pulmonary edema (12.5%), DIC (6.25%) and cerebrovascular accidents (6.25%). Study by Anitha GS *et al.,* [9] showed that 83.9% had vaginal delivery and 16.1% LSCS and also showed that thirty-four patients out of the 56 patients had maternal complications (60.71%). Severe anemia with Hb %3C; 7 g% (12 cases, 21.43%), DIC (11 cases, 19.64%), PPH (9 cases, 16.07%), and abruption (8 cases, 14.29%) were the common complications.

In present study Group A, 20 neonates experienced intrauterine growth restriction (IUGR), whereas in Group B, 14 neonates were affected. Group A also had higher rates of preterm delivery, with 22 cases compared to 12 in Group B. Neonatal thrombocytopenia was more prevalent in Group A (15 cases) than in Group B (6 cases). Additionally, respiratory distress syndrome (RDS) affected 11 neonates in Group A and 2 in Group B, highlighting more significant neonatal complications associated with HELLP syndrome. Study by Chidanandaiah SK *et al.,* [4] showed that perinatal mortality was 41.25%. Study by Anitha GS *et al.,* [9] showed that 46.43% (26 cases) were preterm babies, out of which, 11 (42.3%) cases belonged to class II HELLP, and 30.36% (17 cases) had IUGR and perinatal mortality in this study was 46.43%.

CONCLUSION

In conclusion, the study highlights distinct differences between Group A (severe preeclampsia/eclampsia with HELLP syndrome) and Group B (severe preeclampsia/eclampsia without HELLP syndrome). Group A, comprising younger, predominantly first-time mothers in mid-gestation, exhibits higher liver enzymes, more hemolysis, and elevated blood pressure compared to Group B. Maternal complications like DIC and hepatic infarction are more frequent in Group A, along with increased neonatal issues such as IUGR and preterm delivery. Despite similar maternal morbidity rates, Group A experiences a higher maternal mortality rate than Group B, underscoring the need for tailored management strategies to improve outcomes in severe preeclampsia/eclampsia, particularly with HELLP syndrome.

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