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Original Research Article

Fetomaternal outcome in women with hemolysis, elevated liver enzymes and low platelet count syndrome: a retrospective study

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ABSTRACT

Background: HELLP (hemolysis, elevated liver enzymes and low platelet count) syndrome which is a variant form of severe preeclampsia is an important cause of maternal and fetal mortality and morbidity. The importance lies in the early diagnosis and timely intervention for better fetal and maternal outcome. The objective of this study was to assess the maternal and fetal outcome in pregnancies complicated with HELLP syndrome.

Methods: This is a retrospective study analyzing fetomaternal outcome in 63 women diagnosed with HELLP syndrome in the department of obstetrics and gynecology, Government Medical College, Thrissur from 1st January 2014 to 31st December 2016. Details were collected from data records library.

Results: Among 7,566 deliveries, 63 women (0.83%) had HELLP syndrome. Mean age was 29.5 years. 47.6% (n=30) women developed HELLP syndrome at gestational age less than 34 weeks. Maternal complications were abortion (27.78%), acute kidney injury (16.67%), DIC (16.67%), sepsis (11.11%) and postpartum hemorrhage (11.11%). In this study, HELLP syndrome lead to one maternal death (1.58%). The perinatal mortality was 25.75%.

Conclusions: HELLP syndrome is an alarming complication, which brings high maternal and perinatal morbidity and mortality.

Keywords: Hemolysis elevated liver enzymes and low platelet count, Maternal morbidity, Maternal mortality, Perinatal morbidity perinatal mortality, Preeclampsia,

INTRODUCTION

The HELLP syndrome is a serious complication in pregnancy characterized by a triad of 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.¹ The syndrome was originally identified by Dr Louis Weinstein in 1982. The condition regarded as a variant or a complication of severe preeclampsia, and the diagnosis of the complete form requires the presence of all the major components, while partial or incomplete HELLP syndrome consists of only 1 or 2 elements of the triad.³ There are 2 classification systems - Mississippi classification and Tennessee Classification.

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. 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.² 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. 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.³

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.

METHODS

This is a retrospective study carried out in the department of obstetrics and gynecology, Government Medical College, Thrissur, Kerala, India, a tertiary care from 1st January 2014 to 31st December 2016 (3 years).

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 1.5 lakh). 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 63 cases of HELLP syndrome were diagnosed. Of total deliveries, 608 (8%) had preeclampsia. 49 (77.78%) women with preeclampsia developed HELLP syndrome. The mean age was 29.5 years. 26 women (41.2%) were in the age group of 26-30 years.

Table 1: Gestational age.

Gestational age (weeks)	Number	Percentage
<28 weeks	1	1.59
28-34 weeks	29	46.03
34-37 weeks	32	50.79
>37 weeks	1	1.59

A total 30 (47.6%) patients were admitted with HELLP syndrome at less than 34 weeks of gestation. One woman with gestational age less than 28 weeks (Table 1). HELLP syndrome was seen in 31 (49.2%) primigravida and 32 (50.7%) multigravida, almost same. There were three cases of twin pregnancy. All were booked cases, but 17 (26.98%) women had irregular ANC.

Table 2: Platelet count.

Platelet (lakh)	Number	Percentage
<0.5	2	3.18
0.5-1	10	15.87
1-1.5	15	23.8
>1.5	36	57.15

A total 14 (22.2%) cases were having normal blood pressure. Majority of them, 49 patients (77.78%) had severe pre-eclampsia. Maximum blood pressure recorded was 210/110 mmHg.

Table 3: Bilirubin value.

Bilirubin (mg%)	Number	Percentage
<1.2	28	44.44
1.2-4	33	52.38
>4	2	3.18

Table 4: Birth weight.

Birth weight (kg)	Number	Percentage
<1	13	19.7
1-1.5	17	25.76
1.5-2	18	27.27
2-2.5	11	16.67
>2.5	7	10.6

Two patients developed severe PPH. Two patients developed antepartum eclampsia. One case had ascites. Investigations of these patients showed that the platelet count was less than 50,000 in two cases, 50,000–100,000 in ten cases, and the rest had a platelet count more than 100,000 (Table 2). Transaminases were also raised in all the cases. Mean AST level of 185.6 IU/L and mean ALT of 143.7 IU/L. 35 cases had bilirubin more than 1.2 (Table 3).¹³ Cases showed evidence of hemolysis in peripheral smear. Of total, 50 patients (79.3%) were having partial HELLP and 13 (20.7%) with complete HELLP (Figure 1).

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.

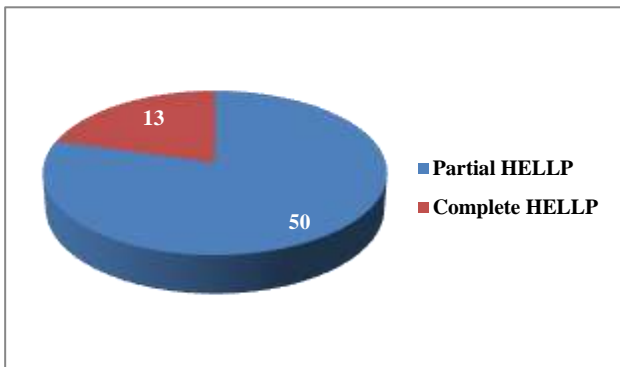


Figure 1: Complete and partial HELLP.

Table 5: Fetal complications.

Neonatal outcome	Number	Percentage
Intrauterine fetal demise	12	48
Low Apgar (<7)	8	32
Neonatal death	5	20
Total	25	100

Table 6: Maternal complications.

Maternal complications	Number	Percentage
Abruption	5	27.78
Acute renal failure	3	16.67
DIC	3	16.67
Sepsis	2	11.11
Postpartum hemorrhage	2	11.11
Eclampsia	2	11.11
Death	1	5.55
Total	18	100

There were 12 (18.2%) cases of intrauterine fetal demise, which was confirmed with sonography. Eight babies born with low Apgar (less than 7) and five cases of neonatal deaths mainly due to prematurity and very low birth weight. 89% neonates were having birth weight less than 2.5 kg (Table 4). Overall perinatal mortality was 25.76% (Table 5). There were 5 (27.78%) cases of abruption, of which one was grade 3A abruption, 3 (16.67%) women with acute renal failures - two underwent dialysis and one patient conservatively managed. 3 (16.67%) women had DIC, 2 (11.11%) women had sepsis, 2 (11.11%) cases of postpartum hemorrhage and 2 (11.11%) women had antepartum eclampsia (Table 6). One maternal death among 63 women, death was due to DIC and sepsis, she had complete HELLP.

DISCUSSION

HELLP syndrome is a life-threatening complication. The incidence of HELLP syndrome in this retrospective study is 0.84% (63 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.^{3,4} This is based on the total number of deliveries. In this study, 8% (608) had preeclampsia and 77.78% (49) 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.^{4,11}

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.^{3,4} In this study, 47.6% (30) patients were admitted with HELLP syndrome at less than 34 weeks of gestation and 49.2% (31) primigravidae and 50.7% (32) multigravida. All were booked cases, but 26.98% (17) women had irregular ANC. There were 68.3% of nulliparous in the study by Campos et al.⁴ 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.^{6,9}

In this study, all (63) were antenatal cases and among them, 79.3% (50) had partial HELLP and 20.7% (13) 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.^{5,8} In the study of Haddad et al 22% (41) required blood transfusion as compared to 17.46% (11) women in this study.¹⁰ 52.3% (33) underwent caesarean section in this study which was lower than 91% CS in the study by Fitzpatrick et al.⁸ 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 50,000.⁸

In this study, maternal complications were abruption 27.78% (5), acute renal failures 16.67% (3), DIC 16.67% (3), sepsis 11.11% (2), postpartum hemorrhage 11.11% (2) and antepartum eclampsia 11.11% (2) and one maternal death due to DIC and sepsis. There were 54 maternal deaths in the study by Isler et al, 6.6% maternal mortality in the study by Pampus et al and no maternal deaths in the studies by Campos et al and Gaseem et al.^{4,7,9,11} There were 54% abruption, 29% eclampsia, 8% DIC and 12.5% renal failure in the study by Chawla et al.³ In this study, there were 12 (48%) cases of intrauterine fetal demise, eight babies (32%) born with low Apgar (less than 7) and five cases of neonatal deaths with 25.76% perinatal mortality when compared to 46.6% in the study by Kota et al.⁶

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, paediatrician, physician, transfusion medicine specialist, anaesthesiologist etc.

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