Original Research Article

Clinical study of maternal and perinatal outcome in pregnant women with HELLP syndrome at a tertiary hospital

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Abstract

Background: HELLP syndrome comprises of hemolysis, elevated liver enzymes, and low platelets. HELLP syndrome occurs in about 0.5 to 0.9% of all pregnancies and complicates 10 to 20% of women with severe preeclampsia. In present study we aimed to study maternal and perinatal outcome in pregnant patients with HELLP Syndrome at a tertiary hospital. **Material and Methods:** Present prospective, observational study was conducted in pregnant women with HELLP/ partial HELLP syndrome with gestational age >28 weeks. The diagnosis and classification of HELLP syndrome was made by Mississippi classification. Data was collected and analysed. Statistical analysis was done using descriptive statistics. **Results:** During study period total 58 patients were diagnosed and labelled as HELLP/ partial HELLP syndrome. HELLP/ partial HELLP syndrome. In present study out of 58 patients 70.69% had partial HELLP syndrome and 29.31% patients had HELLP syndrome. In present study . 6.9%, 10.34% and 12.07% patients had HELLP class I, II and III respectively. Onset of HELLP was noted in antepartum period in 70.69% patients while 13.79% and 15.52% had intrapartum and postpartum onset respectively. 65.52 % patients were delivered vaginally. Significant high-risk factors were pre-eclampsia (88%), eclampsia (7%) and previous history of HELLP (10%) were noted in study patients. In present study DIC (32.76%), acute kidney injury (25.86%), postpartum Hemorrhage (24.14%), abruptio placentae (17.24%), pulmonary edema (15.52%) and maternal death (8.62%) were common maternal complications noted. Prematurity (50%), IUGR (32.76%) and Respiratory distress (29.31%) were common fetal complications noted. Total stillbirths were 18.97% while NICU admission was required in 46.81% neonates. Early neonatal death was noted in 15.52% neonates. **Conclusion:** HELLP syndrome is associated with increased maternal and perinatal morbidity and mortality. Cases of HELLP Syndrome should be treated at a tertiary center setup with a multidisciplinary team, and availability of life saving facilities like mechanical ventilators, dialysis equipment, blood/blood products and neonatal care facilities.

Keywords: HELLP Syndrome, pre-eclampsia, maternal outcome, perinatal outcome

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INTRODUCTION

HELLP syndrome comprises of hemolysis, elevated liver enzymes, and low platelets. HELLP syndrome occurs in about 0.5 to 0.9% of all pregnancies and complicates 10 to 20% of women with severe preeclampsia. HELLP syndrome is one of the common cause of maternal and fetal mortality among pregnant women with hypertension.[1] As with preeclampsia, the etiology and pathogenesis of HELLP syndrome is not completely understood. An increase in vascular thrombosis and activation of the coagulation system may be important in the clinical presentation of this disorder.[2] Vascular repair mechanism deficiency added to vasospasm develops into endothelial dysfunction. This dysfunction promotes platelet

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aggregation and fibrin activation. These aggregation and activation then leads into manifestation occurrence. Platelet over-aggregation leads to thrombocytopenia, while fibrin activation cause hemolysis of the erythrocyte passing through the dysfunctional endothelial. The elevation of liver enzyme caused by ischemic of the liver. The three main manifestations of HELLP syndrome caused by endothelial dysfunction.[2] Once diagnosis of HELLP syndrome has been made, it warrants aggressive intervention with control of blood pressure, anti-seizure prophylaxis, corticosteroid treatment for fetal lung maturity and expeditious delivery.[3] In present study we aimed to study maternal and perinatal outcome in pregnant patients with HELLP Syndrome at a tertiary hospital.

MATERIAL AND METHODS

Present prospective, observational study was conducted in the Department of Obstetrics and Gynaecology, Dr. Ulhas Patil Medical College, Jalgaon from September 2019 to October 2020. Study permission was taken from institutional ethics committee.

Inclusion criteria

• All pregnant women with HELLP/ partial HELLP syndrome with gestational age >28 weeks

Exclusion criteria

• Woman with less than 28 weeks of pregnancy

• Women with others problems like cholecystitis, gastroenteritis, viral hepatitis

The diagnosis and classification of HELLP syndrome was made by Mississippi classification[4]

Table 1: HELLP syndrome: Mississippi triple-class system.[4]

HELLP Class	Platelet count (in µL)	AST or ALT (in IU/L)	Total LDH (in IU/L)
1	≤ 50,000	≥ 70	≥ 600
2	≥ 50,000 and ≤ 1,00,000	≥ 70	≥ 600
3	> 1,00,000 and ≤ 1,50,000	≥ 40	≥ 600
Partial HELLP syndrome	Evidence of severe preeclampsia–eclampsia in association with two of three laboratory criteria for HELLP syndrome		

(HELLP: Homolysis, Elevated Liver enzymes, Low Platelet count, AST: aspartate aminotransferase, ALT: alanine aminotransferase, LDH: lactate dehydrogenase.)

Study was explained and informed consent was taken from each patient for participation. Pregnant women underwent detailed history taking (chief complaints, obstetric history, etc.), clinical examination, urine albumin , haemoglobin, platelet count and biochemical investigations. After initial stabilisation, management was decided depending upon general condition, biochemical parameters and gestational age. Labour was monitored and mode of delivery was noted. Neonates were immediately attended by neonatologists and if required admitted in NICU. Patients were subjected to repeat biochemical investigations; haemoglobin level and platelet count in the postpartum period after 48 hours. Maternal outcome was measured in terms of age of mother, parity, socioeconomic status, period of gestation, severity of preeclampsia, eclampsia, class of HELLP syndrome, mode of delivery, need for blood products, maternal complications like pulmonary edema, acute renal failure, abruption placenta, disseminated intravascular coagulation, postpartum haemorrhage and maternal mortality. Perinatal outcome was measured in terms of prematurity, dysmaturity, intrauterine fetal demise, birth asphyxia, APGAR score, neonatal jaundice, hypoglycaemia, hypocalcaemia, sepsis, NICU admission and early neonatal death. After complete stabilisation patients were discharged. Follow up was kept for 28 days.

Data was collected and analysed. Statistical analysis was done using descriptive statistics.

RESULTS

During study period total 58 patients were diagnosed and labelled as HELLP/ partial HELLP syndrome. HELLP/ partial HELLP syndrome. In present study out of 58 patients 70.69% had partial HELLP syndrome and 29.31% patients had HELLP syndrome. General characteristics such as Maternal age (years), Gestational age (weeks), Parity, Systolic BP (mmHg), Diastolic BP (mmHg), Proteinuria (1+ to 4+) are mentioned in table 2.

Table 2: Demographic And clinical characteristics

Characteristic	HELLP syndrome (Mean ± SD)	partial HELLP syndrome (Mean ± SD)
Maternal age (years)	24.63 ± 6.31	23.26 ± 5.83
Gestational age (weeks)	34.31 ± 4.42	33.53 ± 3.21
Parity	1.22 ± 1.3	1.4 ± 1.0
Systolic BP (mmHg)	164 ± 23.2	158 ± 18.9
Diastolic BP (mmHg)	98.1 ± 13.4	96,3 ± 9.8
Proteinuria (1+ to 4+)	2.1 ± 1.12	2.2 ± 1.0

In present study . 6.9%, 10.34% and 12.07% patients had HELLP class I, II and III respectively. Onset of HELLP was noted in antepartum period in 70.69% patients while 13.79% and 15.52% had intrapartum and postpartum onset respectively. 65.52 % patients were delivered vaginally. Significant high-risk factors were pre-eclampsia (88%), eclampsia (7%) and previous history of HELLP (10%) were noted in study patients.

Table 3: Clinical characteristics

Characteristic	HELLP syndrome	partial HELLP syndrome	Total
No of cases	41 (70.69%)	17 (29.31%)	58
HELLP class I		4 (6.9%)	
HELLP class II		6 (10.34%)	
HELLP class III		7 (12.07%)	
Time of onset			
Antepartum	29 (70.73%)	12 (29.27%)	41 (70.69%)
Intrapartum	6 (75%)	2 (25%)	8 (13.79%)
Postpartum	6 (66.67%)	3 (33.33%)	9 (15.52%)
Mode of delivery			
Vaginal	28 (73.68%)	10 (26.32%)	38 (65.52%)
LSCS	13 (65%)	7 (35%)	20 (34.48%)
High risk factors			
Pre-eclampsia	36 (70.59%)	15 (29.41%)	51 (87.93%)
Eclampsia	3 (75%)	1 (25%)	4 (6.9%)
Previous history of HELLP	4 (66.67%)	2 (33.33%)	6 (10.34%)

In present study DIC (32.76%), acute kidney injury (25.86%), postpartum Hemorrhage (24.14%), abruptio placentae (17.24%), pulmonary edema (15.52%) and maternal death (8.62%) were common maternal complications noted.

Table 4: Maternal complications.

Maternal complications	No of cases (%)		
	Partial HELLP (n=41)	HELLP (n=17)	Total (n=58)
DIC	13 (31.71%)	6 (35.29%)	19 (32.76%)
Acute kidney injury	11 (26.83%)	4 (23.53%)	15 (25.86%)
Postpartum Hemorrhage	9 (21.95%)	5 (29.41%)	14 (24.14%)
Abruptio placentae	6 (14.63%)	4 (23.53%)	10 (17.24%)
Pulmonary edema	6 (14.63%)	3 (17.65%)	9 (15.52%)
Maternal death	2 (4.88%)	3 (17.65%)	5 (8.62%)

Prematurity (50%), IUGR (32.76%) and Respiratory distress (29.31%) were common fetal complications noted. Total stillbirths were 18.97% while NICU admission was required in 46.81% neonates. Early neonatal death was noted in 15.52% neonates.

Table 4: Perinatal complications.

Neonatal complications	No of cases (%)		
	Partial HELLP (n=41)	HELLP (n=17)	Total (n=58)
Prematurity	20 (48.78%)	9 (52.94%)	29 (50%)
IUGR	13 (31.71%)	6 (35.29%)	19 (32.76%)
Respiratory distress	11 (26.83%)	6 (35.29%)	17 (29.31%)
NICU admission	16 (39.02%)	6 (35.29%)	22 (46.81%)
IUD	7 (17.07%)	4 (23.53%)	11 (18.97%)
Early neonatal death	6 (14.63%)	3 (17.65%)	9 (15.52%)

DISCUSSION

The HELLP syndrome (hemolysis, elevated liver enzymes, and low platelets) is a variant of severe pre-eclampsia that is associated with significant maternal and perinatal morbidity and mortality. Risk factors include primigravida, overweight, previous history of preeclampsia, white race, history of HELLP in previous pregnancy, maternal age >35 years, history of poor pregnancy outcome chronic hypertension. Fetal complications likely to develop are prematurity, intrauterine growth retardation, IUD, RDS.[6] Maternal complications are DIC, bleeding, abruption, PPH, eclampsia, pulmonary edema, respiratory failure, adult respiratory distress syndrome (ARDS), cardiac arrest, myocardial ischemia, cerebral edema, seizures, central venous thrombosis, cerebral hemorrhage, hepatic

hematoma, ascites and infection. Maternal mortality occurs by cerebral hemorrhage or stroke (26%).[7,8] Abhijit R[9] studied 600 patients and prevalence of HELLP syndrome and partial HELLP syndrome were found to be 7.3% and 5.3% respectively in preeclampsia. The systolic blood pressure, gestational age at admission and during delivery, hematological and biochemical variables, rate of spontaneous vaginal delivery and type of anesthesia were significantly different in HELLP syndrome and partial HELLP syndrome than in the preeclampsia group. There were statistically significant difference in perinatal outcome like birth weight, intrauterine death, neonatal death, and admission in NICU. Eclampsia was significantly increased in both HELLP syndrome and partial HELLP syndrome. Conclusion: Both HELLP and partial HELLP syndrome must be diagnosed as soon as possible in pregnant or post-partum women with preeclampsia. HELLP syndrome is severe than preeclampsia in terms of maternal and perinatal outcome. Partial HELLP syndrome is almost as grave as HELLP syndrome. Similar results were noted in present study. Shelat PM *et al.*,[10] noted that HELLP syndrome was more common in younger age group (45%) and in primigravida (52.5%). Most of the patients presented at >36 weeks of gestation (40%) and most of the patients delivered by caesarean section (67.5%). Maternal complications were acute renal failure (27.5%), DIC (22.5%), maternal mortality (7.5%). Neonatal complications associated were intrauterine death (27.5%), prematurity (25%) and intrauterine growth retardation (15%). Lakshmi NK *et al.*,[8] studied 91 cases of Preeclampsia, 12 cases (13.18%) developed HELLP syndrome and out of 11 cases of Eclampsia, 3 cases (27.27%) had HELLP Syndrome. Majority of the cases belonged to 21-25years age group and were mostly from lower Socio-economic status. The present study showed 60% maternal morbidity and 6.6% maternal mortality and the perinatal morbidity and mortality was 46.6% each. Ismail J[11] studied 55 patients of HELLP syndrome, 24 % had some complications. Postpartum hemorrhage was the most common complication followed by DIC. Caesarean hysterectomy was done in one case following severe atonic PPH. There was one case of maternal death, who developed DIC and acute renal failure. 89.1 % of the babies were complicated by intrauterine growth restriction and 78.2% were preterm. Immediate delivery is the primary choice at 34 weeks' gestation or later. At 27 to 34 weeks of gestation, corticosteroid treatment delivery is preferred. Conservative management for more than 48 to 72 hours is considered in women before 27 weeks of gestation. In cases of sever preeclampsia before 24 weeks of gestation, termination of pregnancy is seriously considered to prevent severe maternal morbidity and mortality.[7,8]

CONCLUSION

HELLP syndrome is associated with increased maternal and perinatal morbidity and mortality. Cases of HELLP Syndrome should be treated at a tertiary center setup with a multidisciplinary team, and availability of life saving facilities like mechanical ventilators, dialysis equipment, blood/blood products and neonatal care facilities.

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