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Original Research Article

HELLP syndrome and its implications on maternal and perinatal outcome

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ABSTRACT

Background: The HELLP syndrome is characterized by hemolysis (H), elevated liver enzymes (EL) and low platelet count (LP). This syndrome in general complicates 0.2-0.6% of all pregnancies but its incidence increases to 4-12% in severe preeclampsia. In about 15% cases, HELLP syndrome presents without definitive criteria for preeclampsia (atypical preeclampsia). This present study will throw light on incidence, clinical and biochemical profile of patients with HELLP syndrome and maternal and perinatal outcome.
Methods: A prospective study was conducted in the department of Obstetrics and Gynecology, Bebe Nanki Mother and Child Care Centre, Amritsar, India from January 2016 to August 2017 after approval from institutional ethics committee.
Results: In the present study, total 2949 antenatal admissions were there during the course of study. Out of these patients, 352 patients had preeclampsia-eclampsia (11.93%). Out of these 352 patients, 71 complicated with HELLP syndrome (20.17%). 17.9% had partial HELLP and 2.3% had complete HELLP syndrome. 30.16% had only EL, 31.75% had only LP, 87.3% had elevated LDH (depicted hemolysis). 4.76% had both EL and LP, 30.16% had both EL and elevated LDH, 20.63% had both LP and elevated LDH levels. Majority of the patients presented after 36 weeks of gestation. Only 5 patients had HELLP syndrome in the postpartum period. Among partial HELLP patients, 59.02% delivered vaginally and 40.98% delivered by LSCS and among complete HELLP patients 28.6% delivered vaginally and 71.4% delivered by LSCS. Perinatal mortality rate was 43.7%. Severe maternal complications such as PPH, DIC, abruptio placentae, pulmonary edema and renal failure were seen high among HELLP patients.
Conclusions: As the incidence is very high, one must be aware of its clinical and laboratory findings so that early diagnosis and treatment can be initiated. Close surveillance of the mother should be continued even after delivery.

Keywords: EL, HELLP syndrome, LP, LDH, Preeclampsia

INTRODUCTION

HELLP syndrome is one of the serious complication of preeclampsia with high risk for the mother and the fetus and is characterized by hemolysis, elevated liver enzymes and low platelet count. It was first suggested by Weinstein in 1982.[1] This syndrome in general complicates 0.2-0.6% of all pregnancies but its incidence increases to 4-12% in severe preeclampsia. In about 70% of the cases, the HELLP syndrome develops before delivery with a peak frequency between 27th and 37th gestational weeks; 10% occur before the 27th week and 20% beyond 37th gestational week.[2] In the postpartum period the HELLP syndrome usually develops within 48 hours in women with hypertensive disorder of pregnancy. Although variable, the onset of the HELLP syndrome is usually rapid.[3] Majority of women with this syndrome have had hypertension and proteinuria, which may be

absent in 10-20% of the cases.[4] Excessive weight gain and generalized edema precede the syndrome in more than 50% of the cases. The presentation of patients with HELLP syndrome is variable. The patients may have symptoms from flu like illness to gastrointestinal hemorrhage.[5] 90% of patients experience malaise, fatigue, and nonspecific complaints for a few days seeking medical evaluation. The ominous symptom of epigastric or right upper quadrant pain is present only in half to two-thirds of patients.[6,7]

There are two major classifications for diagnosing HELLP syndrome i.e. Tennesse classification and Mississippi classification (Class 1, 2 and 3). Diagnosis of the complete HELLP syndrome requires the presence of all 3 major components while partial or incomplete HELLP syndrome consists of only 1 or 2 elements of the triad.

Diagnosis of HELLP syndrome is an indication for immediate delivery if pregnancy is ≥34 weeks or at any gestational age if pulmonary edema, placenta abruption, non-reassuring fetal status and uncontrollable hypertension is present. All other cases require administration of magnesium sulfate, steroids and delivery within 24 hours after the second steroid dose.[8] Maternal and fetal condition, gestational age, bishops score, inducibility of the cervix are few factors which helps in deciding over the mode of delivery.

METHODS

This prospective study was conducted in the department of Obstetrics and Gynecology at Bebe Nanki Mother and Child Care Centre, Government Medical College, Amritsar from January 2016 to August 2017 after approval of institutional ethics committee.

Informed consent was taken from each patient prior to the start of the study. Total numbers of antenatal admissions during the course of study were recorded. The mothers suffering from hypertensive disorders of pregnancy were selected. Further, these patients were classified into different classes of hypertensive disorders of pregnancy. The patients who suffered from preeclampsia –eclampsia were studied and looked for the complication of HELLP syndrome.

Number of cases and control

1. Group A (study group): included 200 patients suffering from hypertensive disorders of pregnancy with preeclampsia and eclampsia. It was further subdivided into the following subgroups:
- Subgroup A: Mild preeclampsia-patients with systolic blood pressure less than 160 mm Hg and diastolic blood pressure less than 110 mm Hg.
- Subgroup B: Severe preeclampsia-patients with systolic blood pressure ≥160 mm Hg and diastolic blood pressure ≥110 mm Hg.
- Subgroup C: Eclampsia
- Atypical preeclampsia
2. Group B (control group): included two hundred normotensive antenatal patients.

Women were subjected to detailed history taking, clinical examination, presence of albumin in urine, hemoglobin, platelet count and biochemical investigations. Labour was monitored and mode of delivery was noted. Patients were subjected to repeat biochemical investigations; hemoglobin level and platelet count in the postpartum period after 48 hours. Preeclampsia and eclampsia patients complicated with HELLP syndrome with its implications on maternal and perinatal outcome were noted.

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, hypoglycemia, hypocalcemia, sepsis, NICU admission and early neonatal death. Baby was followed upto 7 days after birth.

RESULTS

There were 2949 antenatal admissions during the course of study. Out of these 2949, 352 patients had preeclampsia /eclampsia with incidence of 11.93%. Out of these 352 patients, 71 had complication of HELLP syndrome with incidence of 20.17% among preeclampsia/eclampsia patients. 8 patients (2.3%) had all the features of HELLP syndrome and 63 (17.9%) had partial HELLP syndrome.

Table 1: Clinical profile of the patients with HELLP syndrome.

Symptoms	Partial HELLP (n=63)		Complete HELLP (n=8)	
Severe headache	30	47.6%	3	37.5%
Vomiting	18	28.57%	3	37.5%
Epigastric pain	8	12.7%	5	62.5%
Visual disturbances	27	42.85%	4	50%

Mean age of all the patients with HELLP syndrome was 25.33±5.00 years. Among the partial HELLP syndrome, majority of the patients had severe preeclampsia (33.33%), 25.4% had atypical preeclampsia with no proteinuria, 22.22% were with eclampsia and 19.05% had mild preeclampsia.

Table 2: Laboratory investigations at time of admission and after 48 hours of delivery.

	Partial HELLP		Complete HELLP	
	Anteparum	**Postpartum**	**Antepartum**	**Postpartum**
Mean Hb (gm/dl)	8.19±1.02	8.56±1.03	5.97±1.07	8.03±0.99
Mean Platelet count (lac/cumm)	1.58±0.54	1.8±0.47	0.66±0.40	0.77±0.24
Mean S.bilirubin (mg/dl)	1.43±0.759	0.953±0.386	2.48±1.40	2.16±1.97
Mean SGOT (IU/L)	58.93±44.00	50.65±24.09	93.62±31.81	74.16±29.97
Mean SGPT (IU/L)	60.10±41.83	49.58±24.58	97.87±39.14	67.33±27.69
Mean LDH (U/L)	832.17±249.81	686.44±238.726	1798±1196.25	1306.33±296.94

Among complete HELLP patients, 4 (50%) had severe preeclampsia, 2 (25%) had atypical preeclampsia, 1 patient (12.5%) had eclampsia and 1 patient (12.5%) was with mild preeclampsia. 30.16% patients of partial HELLP had only elevated liver transaminases, 31.75% only low platelet count, 87.3% had elevated LDH levels (indicative of hemolysis), 4.76% had both elevated liver enzymes and low platelet count, 30.16 % had both elevated liver enzymes and LDH, 20.63% had both elevated LDH and low platelet count. Majority of the patients were primigravida i.e. 63.49% in partial HELLP and 62.5% in complete HELLP syndrome. In group 2, primigravidae and multigravidae were 50% each (p=0.05).

Mean gestational age of all the patients with HELLP syndrome was 36.33±3.62 weeks. Only 5 patients presented with partial HELLP syndrome after delivery within 48 hours. Mean systolic and diastolic blood pressure of all the patients with HELLP syndrome was 163.21±18.57 mmHg and 109.32±9.16 mmHg respectively.

Mode of delivery

Among the patients of partial HELLP, 58.73% had vaginal delivery and 41.27% had cesarean section.

Table 3: Perinatal complications.

	Partial HELLP (n=63)		Complete HELLP (n=8)		Group 2 (n=200)	
Prematurity	15	23.81%	4	50%	12	6%
Respiratory distress	19	30.16%	4	50%	12	6%
IUGR	22	34.92%	3	37.5%	2	1%
IUD	20	31.75%	3	37.5%	6	3%
NICU admission	15	23.81%	3	37.5%	2	1%
Early neonatal death	6	9.5%	2	25%	2	1%

Among complete HELLP, 25% had vaginal delivery and 75% underwent cesarean section. Among group 2, 68.5% had vaginal delivery and 31.5% underwent cesarean section (p=0.04). Perinatal mortality rate among all the HELLP syndrome patients was 43.7%.

Table 4: Maternal complications.

	Partial HELLP (n=63)		Complete HELLP (n=8)		Group 2 (n=200)	
PPH	6	9.52%	2	25%	7	3.5%
DIC	1	1.59%	3	37.5%	0	0%
Abruptio placentae	10	15.8%	2	25%	0	0%
Pulmonary edema	5	7.94%	2	25%	0	0%
Renal shut down	4	6.35%	4	50%	0	0%
Maternal death	8	12.7%	6	75%	0	0%

Majority of the patients had complications associated with HELLP syndrome. Out of 8 patients of complete HELLP, 6 (75%) patients died. Among partial HELLP patients, 8 maternal deaths were seen (12.7%).

DISCUSSION

It has been widely accepted that standard antenatal care has immense values in reducing the incidence of HELLP syndrome by early detection of preeclampsia and its prompt management. HELLP syndrome was originally described by Pritchard et al in and the acronym was coined by Weinstein.[1,9] HELLP syndrome is a poorly understood pregnancy related condition with a rapid onset and is typically seen in patients with severe preeclampsia, although it can occur in the absence of preeclampsia in 10% of the cases (atypical presentation).

Mean maternal age in our study was 25.36±5.00 years comparable with the study conducted by Bang NO et al i.e.27.31±5.0 years.[10] Majority of the patients in the present study were primigravid, 63.64% in complete HELLP and 66.55% in partial HELLP syndrome. The results were comparable with study by Boopathi A and Kushtagi P et al in which 60.7% patients with HELLP syndrome were primigravida.[11]

In the present study the incidence of HELLP syndrome was 20.17% among the preeclampsia/eclampsia patients.

The result was comparable with the study by Rose J et al i.e. 22.87%.[12] Mean gestational age among partial HELLP syndrome patients was 36.34±3.75 weeks and among complete HELLP patients was 36.32±2.60 weeks and comparable with the study conducted by Kaur AP et al i.e. 36.06±3.50 weeks in partial HELLP and 35.00±4.3589 weeks in complete HELLP syndrome.[13] Mean systolic and diastolic blood pressure in all the patients with HELLP syndrome was 163.21±18.5 mmHg and 109.32±9.16 mmHg comparable with mean systolic and diastolic blood pressure in the study by Chawla S et al i.e. 166±18.65 and 110.5±12.7 mmHg, respectively.[14] The mean platelet count in the patients with complete HELLP in the present study was 0.668±0.40 lacs/cumm comparable with the study by Osmanagaoglu MA et al i.e. 62,676±38,333.37/cumm.[15] Mean LDH levels in the present study at time of admission was 832.17±249.81 U/L in partial HELLP patients and 1798.25±1196.25 U/L in complete HELLP patients. In the study by Rakshit A et al, mean LDH levels in partial HELLP was 996.1±246.3 U/L and in complete HELLP was 1018.5±383.7 U/L.[16]

In the present study, 30.16% had only elevated liver enzymes, 33.33% had only low platelet count. Kaur AP et al conducted a study in which only elevated liver enzymes was seen in 67.5% of partial HELLP patients (higher than our study) and 24.3% had only low platelet count (slightly lower than our study).[13]

Maternal and perinatal outcome

In the present study, among partial HELLP patients, 58.73% delivered vaginally and 41.27% underwent cesarean section and among complete HELLP patients, 25% had vaginal delivery and 75% had cesarean section. The results were comparable with study by Rakshit A et al i.e. VD in 27.27% and LSCS in 72.72% among complete HELLP patients.[16] Perinatal mortality rate among all the patients of HELLP syndrome was 43.7% comparable with the study by Rose J et al i.e. 42.2%.[12] In the present study, 22.22% patients with partial HELLP had eclampsia and 12.5% patients of complete HELLP had eclampsia and this was comparable with study by Bang NO et al in which 23% had eclampsia with HELLP syndrome. Total 14 maternal deaths were seen out of 71 patients with HELLP syndrome (19.7%) lower than study by Tiwari P et al i.e. 37.5%.[17]

CONCLUSION

HELLP syndrome complicates women with preeclampsia. Pregnancies complicated with HELLP syndrome are unpredictable and are predilected with worst prognosis. As the incidence of HELLP syndrome is very high, one must be aware of this syndrome as well as its clinical and laboratory findings, so that proper diagnosis can be made, and therapy can be initiated as early as possible. Adverse maternal and perinatal outcomes stresses upon the need for early ANC registration, regular antenatal follow up and monitoring of clinical symptoms and laboratory parameters.

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