Original research article

Recent Trends in HELLP Syndrome

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Abstract

Background: HELLP syndrome is a serious complication in pregnancy characterized by haemolysis, 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 pre-eclampsia. National Institute of Health estimates that one in every four pregnant patient develops serious complication due to HELLP syndrome which is mostly due to delayed treatment.

Aims and Objectives: This study was done to find out the prevalence of HELLP Syndrome and maternal and fetal outcomes associated with it.

Methods: The present Prospective cross sectional study was conducted in the Department of Obstetrics & Gynaecology, Maharishi Markendeshwar Institute of Medical Sciences and Research (MMIMSR), Mullana, Ambala, Haryana, India during the period from September 2020 to January 2022. 55 patients who developed HELLP syndrome or partial HELLP syndrome were studied in this study.

Results: In the present study, 1.83% of patients admitted for delivery developed HELLP syndrome. Majority of patients developed the condition by 32-36 weeks. Maternal morbidity was 34.54%. Prematurity was major fetal complication with HELPP syndrome with prevalence of 76.36%. There was no maternal death in our study.

Conclusions: HELLP Syndrome is a very severe variant and a dreadful complication of Preeclampsia and Eclampsia .Early diagnosis and appropriate intervention by termination of pregnancy to arrest further progress so as to reduce maternal and neonatal morbidity and mortality associated with this deadly disease. Timely intervention is a very important tool in bringing down the maternal and perinatal morbidity and mortality in resource poor country like India.

Keywords: HELLP Syndrome, Perinatal Morbidity, Maternal morbidity, Complications

Introduction

HELLP is an acronym that refers to a syndrome in pregnant and postpartum women characterized by hemolysis with a microangiopathic blood smear, elevated liver enzymes, and a low platelet count[1]. It probably represents a severe form of preeclampsia, but the relationship between the two disorders remains controversial. HELLP may be a separate disorder from preeclampsia because as many as 15 to 20 percent of patients with HELLP syndrome do not have antecedent hypertension or proteinuria.[2-4] The HELLP syndrome was originally described by Pritchard et al in 1954.[5] HELLP Syndrome was named by Dr Louis Weintsein1 in 1982 based on its clinical features, H (haemolysis) is microangiopathic hemolytic anemia, EL(Elevated liver Enzymes), LP (Low platelet count). In Tennessee[6] classification system diagnostic criteria for HELLP are haemolysis with increased LDH (>600), AST (>70 μ/L) platelets <100-109/L. Diagnosis of complete form of the HELLP requires the presence of all 3 major components while partial or incomplete HELLP syndrome requires only 1 or 2 elements of the triad. Haemolysis characterised by microangiopathic hemolytic anemia is the hall mark of HELLP syndrome. It is diagnosed by presence of fragmented (shistocytes) or contracted red cells with spicules (Burr cells) in the peripheral smear. Increased serum lactate dehydrogenase level, decreased haptoglobulin concentration and the prescence of unconjugated bilirubin (>1.2 mg/100ml) all shows sign of haemolysis. Liver enzyme elevation shows liver involvement and also haemolysis. The activated platelets adhere to the damaged vascular endothelial cells leading to increased platelet consumption and decreasing the count.

Class I
Platelet count ≤50,000/mm3
Serum AST or Serum ALT ≥70 IU/L
Serum LDH ≥600 IU/L

Class II
Platelet count >50,000 –≤ 100,000/mm3
Serum AST or Serum ALT ≥70 IU/L
Serum LDH ≥600 IU/L

Class III
Platelet count >100,000 to ≤150,000/mm3
Serum AST or Serum ALT ≥40 IU/L
Serum LDH ≥600 IU/L

The onset of HELLP syndrome is atypical, variable and rapid and the diagnosis can be delayed. Many of them are misdiagnosed as gastritis, oesophagitis, hepatitis, cholecystitis, viral fever or idiopathic thrombocytopenia. Typical clinical features are right upper quadrant pain, nausea, vomiting and epigastric pain. Pain abdomen can be intermittent or colicky. It can be associated with malaise also. Study was done to find out the cases of HELLP Syndrome and complications associated with it.

Material and methods

The present study was conducted in the Department of Obstetrics & Gynaecology, Maharishi Markendeshwar Institute of Medical Sciences and Research (MMIMSR), Mullana, Ambala, Haryana, India during the period from September 2020 to January 2022. This study was a prospective cross sectional study. This was done with 55 patients. The sample size was measured using N Master sample size calculation software produced by Department of Biostatistics, Maharishi Markendeshwar Institute of Medical Sciences and Research

(MMIMSR), Mullana, Ambala, Haryana, India with precision of 5% and confidence interval of 95%. Ethical clearance was obtained from MMIMSR hospital committee.
Details of these patients were recorded in the proforma.

Inclusion criteria:

1. All pregnant women with hypertension who developed HELLP/ partial HELLP were included.
2. Gestational age >20 weeks.

Exclusion criteria:

1. Woman with less than 20 weeks of pregnancy.
2. Women with others problems like cholecystitis, gastroenteritis, viral hepatitis.

Gestational age of the pregnancy was determined using last menstrual period in patients with regular cycles or by first trimester ultrasound in those with irregular cycles. Demographic data of the patient were collected, maternal symptoms and perinatal outcome was also assessed by Apgar scoring, preterm /term IUFD, still births. Diagnosis and classifications of HELLP syndrome was made using the criteria established by Sibai et al- complete or partial HELLP depending on the components involved and Mississippi classification i.e. abnormal peripheral smear raised LDH (more than 300 units/litre) elevated total bilirubin (>1.2mg%) elevated liver enzymes AST>70u/L) and low (platelets <1lakh/mm3). Clinical features as blood pressure, proteinuria, and type of drugs used any maternal complications as abruption; Eclampsia, DIC(disseminated intravascular coagulation), AKI(acute kidney injury), Pulmonary edema or pleural effusion, wound haematoma and any need of blood transfusions were noted. The patients diastolic BP was maintained between 90 and 100 mmHg using Nifedepine, ,Oral/Injection Labetalol or a combination of these drugs. Magnesium Sulphate was started in cases with imminent eclampsia and preclampsia as per Pritchard regimen Blood and Blood products were used to correct coagulation abnormalities.

Methodology: Plan of activity and time chart were formulated after taking informed consent from the woman and/or relatives. The data was analysed by Microsoft Office Excel 2010 version. The results were expressed as number and percentage for all the qualitative variables. Mean and standard deviation were used for quantitative variables.

Results:

In this prospective cross sectional study there were a total of 3003 deliveries in our institution, MMIMSR, Mullana. Among them 260 patients had hypertension complicating pregnancy. Among them 55 cases developed HELLP syndrome. 50 patients had Partial HELLP and 5 patients had complete HELLP. Of the 260, 41 patients had preeclampsia and 219 cases had Gestational Hypertension. Maximum numbers of cases were recorded at 32-36 wk. The patients had varied ways of presentation mainly with features of severe pre-eclampsia **(Table-1**A**).** 74.5% of the patients with HELLP had caesarean section **(Table-2).** One patient developed peripartum cardiomyopathy. Atonic PPH was present in 3.6% of patients. Eclampsia was also seen in 3.6% of patients. LDH was elevated more than 1000 in 5 of the patients and complications were more in them. One patient had eclampsia and the other had abruption. ALT and AST was also more than 70 in all of them **(Table-3).** The mean cause of perinatal deaths in our study was prematurity. There was one IUD, 3 still birth and 5 neonatal deaths in our study **(Table-4).**

Table 1A: Cases according to gestational age.

Gestational Age	Number of Cases	Hellp	Partial Hellp
<26 WEEKS	6	0	6
28 – 32 WEEKS	13	2	11
32 -36 WEEKS	20	3	17
>36 WEEKS	16	0	16
TOTAL	55	5	50

Table 2: Mode of Delivery.

MODE OF DELIVERY	NUMBER OF CASES	PARTIAL HELLP	HELLP
VAGINAL DELIVERY	14(25.45%)	14(28%)	0
CAESAREAN DELIVERY	41(74.50%)	36(72%)	5(100%)
TOTAL	55(100%)	50(100%)	5(100%)

Table 3: Maternal Complications.

MATERNAL COMPLICATIONS	NUMBER OF CASES
Atonic PPH	2(3.6%)
Cardiac Complications	1(1.8%)
Eclampsia	2(3.6%)
Abruption	1(1.8%)
Renal complications	2(3.6%)
Oliguria	5(9.09%)
Maternal death	0

Table 4: Perinatal Complications.

PERINATAL COMPLICATIONS	HELLP	PARTIAL HELLP	TOTAL
PRETERM	5	37	76.3%
IUGR	2	6	14.5%
STILL-BIRTH	0	4	7.7%
LOW APGAR	2	9	20%
IUD	1		1.8%
EARLY NND (NEONATAL DEATH)	2	3	9%

Discussion:

HELLP Syndrome is a serious obstetric complication in pregnancy. Incidence is reported to be 0.5 to 9% of all pregnancies and in 10-20% of cases with severe preeclampsia and eclampsia. Our study showed an incidence of 1.83%. Chawla sushil[7] reported an incidence of 0.45% in general population and 3.7% of the hypertensive patients. Abdul Kadir[8] et al reported an incidence of 0.27%. Kumari sowjanya[9] et al reported an incidence of 32.23.

78.1% Patients were booked 21.9% were unbooked in the study 27(49%) were primigravida with 28 (51%) were multi gravida. Sowjanya et al[9] reported 52.64% booked cases 47.36%

unbooked- Kota[10] reported 80% of cases were referred. As per Kota et al 73.3% of the cases were primi gravida and 26.6% were multigravida women. The condition was present both in primi gravida and multi gravida thus indicating that the condition should be suspected in multi gravida too. Higher incidence of caesarean section is seen in complete HELLP. In our study it was 100% which was also reported by Audibert et al.[11]

28% of the partial HELLP cases had a vaginal delivery. Lakshmi Narayana Kota[10] reported 86.6% of cases delivered by caesarean section. Partial HELLP syndrome can progress to complete HELLP. Audibert[11] et al suggest that complications with partial HELLP syndrome are not as severe as in complete HELLP syndrome with severe pre-eclampsia – eclampsia which has serious maternal morbidity.[12]

Mean Maternal age was 33 years in our study with a range from 20-39. There were 27primigravida (49%) and 28 (51%) were multigravida. Sushil Chawla[7] et al reported a mean age of 24.25+3.05 and a mean gestational age of 32.89 +_2.66 wks. Kota[10] et al reported that majority of cases belonged to 21-25 years' group.

Sowjanya kumari[9] et al reported maximum number of cases in the same gestational age as ours that is 32 - 36 weeks as in **Table 1**. Sushil Chawla[7] reported a mean gestational age of 32.89+2.66. All patients of complete HELLP had caesarean delivery where as 28% of the partial HELLP cases had a vaginal delivery as in **Table 2**. Kota et al[10] reported that 86.6% were delivered by caesarean section.

As in **Table 3** Maternal morbidity was 34.54%. No Maternal deaths were there. Lakshmi Narayana Kota[10] reported a maternal mortality of 61.66% and morbidity of 60%. Abdul Kadir[8] et al reported an overall rate of adverse maternal complications of 16.2% and maternal mortality of 0.9%. Ashwini et al[12] had reported that most maternal complications are due to DIC and Abruptio placenta. Sushil Chawla[7] reported a maternal mortality of 12.5% due to pulmonary oedema, liver haematoma and DIC. Sowjana Kumari et al[9] reported a maternal mortality of 4.5%.

As in **Table 4**, 76.36% of babies were preterm. Still birth and IUD were 7.7% with 1.8% respectively. Perinatal morbidity was 14.4% with mortality 9%. Abdul Kadir[8] et al also reported an association between gestational age and Neonatal morbidity and mortality. Ashwini et al[12] reported that prematurity with IUGR accounts for most common complications among HELLP syndrome patients. Perinatal morbidity and mortality was 46.6% each as sited by Lakshmi Narayana Kota.[10] Chawla Sushil et al[7] reported a perinatal mortality of 45.8% cause due to prematurity and IUGR. Sowjana Kumari et al[9] reported prematurity as the major cause for perinatal mortality (24%). Interestingly, our patients who all had developed renal dysfunction, all recovered with normal renal function without the need for dialysis. Recent reports show that HELLP syndrome is the most common cause of acute renal failure in pregnancy.[13] Our findings suggest that early diagnosis and intervention can prevent the requirement for dialysis in these patients.

Our results, in terms of maternal and fetal survival, compare favourably to the study of Audiber F et al.[14] All our 55 patients developed HELLP in the antepartum period. No patients developed HELLP in the post-partum period. Lakshmi Narayana Kota[10] et al also reported that all cases had occurred in the antepartum period. Sushil Chawla[7] reported that 20% of the patients developed HELLP in post-partum period. Women with post-partum HELLP syndrome have

significantly higher incidence of complication as pulmonary oedema, renal failure, DIC and sub capsular haematoma.

Conclusion:

Early registration and regular antenatal check-ups play a major role in early diagnosis and classification of HELLP Syndrome. Availability of better transport facilities and prompt referral is essential. HELLP Syndrome must be treated in tertiary care centre as it is one of the dreadful obstetric complication which needs multidisciplinary team approach, availability of life saving facilities like mechanical ventilators, dialysis, equipment and blood products and neonatal care facilities. For this reason, obstetrician at any level should be attentive, alert and need to improve quality care and make efforts for early identification even at its atypical presentation and should be able to provide skilled management techniques till the case is shifted to tertiary care centre.

Early detection and classification of HELLP syndrome helps in providing better management. Prompt referral, appropriate intervention and availability of life saving facilities like ventilators, dialysis units and blood products at the tertiary care centres will significantly reduce the maternal and neonatal morbidity and mortality. It is also important for expecting mothers to be aware of this condition and symptoms so that they can report earlier to the health care professionals. Timely intervention becomes a very important tool in bringing down the maternal and perinatal morbidity and mortality in resource poor country like India.

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