Original Article

Indian Journal of Obstetrics and Gynecology
Volume 11 Number 1, January – March 2023
DOI: http://dx.doi.org/10.21088/ijog.2321.1636.11123.6

Prospective Observational Study to Determine Perinatal Outcome in Patients with HELLP Syndrome

Polareddy Preethi Reddy[1], Vaishali Taralekar[2], Aniket Kakade[3]

How to cite this article:
Polareddy Preethi Reddy, Vaishali Taralekar, Aniket Kakade/Prospective Observational Study to Determine Perinatal Outcome in Patients with HELLP Syndrome/Indian J Obstet Gynecol. 2023;11(1):29-37.

ABSTRACT

Background: HELLP syndrome is a serious obstetric complication in pregnancy characterised by hemolysis, elevated liver enzymes and low platelet count. Incidence is 9.7% and prevalence ranges from 0.5-0.9%. The aim of the study was to study the incidence, different clinical presentations and diagnosis of HELLP syndrome in Pre eclampsia and eclampsia and to analyse the severity, complications, maternal and perinatal outcome.

Aim & Objective: To determine perinatal outcome in patients diagnosed with HELLP syndrome.

Methodology: The clinical trial was conducted for a period of two years OBGY department of Bharati Vidyapeeth University, Pune. It is an prospective observational study where a total number of 30 cases of HELLP syndrome above 28 weeks of gestational age were admitted in Bharati hospital during the study period of 24 months. Data analysis was done and appropriate statistical tests were used.

Results: A total of 30 females with HELLP syndrome visiting tertiary care teaching hospital were included in the study. The mean age of the patients was ranging between 21 to 43 years. The mean gestation age was ranging between 28 to 38 weeks. Majority 13 (43.3%) of women were primigravida, followed by G2A1 7(23.3%), G2P1L1 3(10.0%), G3P1L1 and G3P1L1A1 2(6.7%) each, G3A2, G4P1D1A2 and G2P2L1 1(3.3%)each. There were total 8 (26.6%), 7 (23.4%) of HELLP syndrome patients had pre eclampsia and GDM, respectively, one and 2 of these patients were also having hypothyroidism respectively. 2 (6.7%) each patients had hypothyroidism, anemia and chronic hypertension. While, eclampsia, epilepsy, IVF and gestational hypertension were reported in 1 (3.3%) patient each. Majority of women with HELLP syndrome had brisk (24 (80%) type of deep tendon reflexes, followed by exaggerated 3 (10%) and there were 3 (10%) women with normal reflexes. Majority of women the mode of delivery was emergency LSCS (60%), mean of the APGAR score at 1 minandat 5 minutes was recorded among 25 (83.33%) patients.

The NICU admission was require damong 14/30 (46.7%) of new born, while it was not required in 16 (53.3%) of new born.

Conclusion: This study was done to intensify our efforts to reduce pre eclampsia with HELLP syndrome by undergoing

Author's Affiliation: [1]3rd Year PG Student, [2,3]Professor, Department of Obstetrics and Gynecology, Bharati Vidyapeeth (Deemed to be University), Pune 411043, Maharastra, India.

Corresponding Author: Aniket Kakade, Professor, Department of Obstetrics and Gynecology, Bharati Vidyapeeth (Deemed to be University), Pune 411043, Maharastra, India.

E-mail: polareddy458@gmail.com

Received on: 06.03.2023

Accepted on: 28.03.2023

regular antenatal care, early detection of pre eclampsia and its prompt management and early detection of complications with timely intervention.

Keywords: Elevated liver enzymes; Haemolysis; Thrombocytopenia; Maternal and fetal outcomes; Complications.

INTRODUCTION

Pregnancy related hypertensive disorders are one of the main causes of morbidity and mortality in both mother and fetus.[1,2] Pre eclampsia has long been known tobe linked to thrombocytopenia, elevated liver enzymes, and hemolysis. Weinstein believed that the signs and symptoms made up of separate condition from severe pre eclampsia, and he gave it the acronym HELLP syndrome (H = hemolysis, EL = elevated liver enzymes, LP = low platelets) syndrome in 1982. The HELLP is currently thought of as a complication or as ever form of pre eclampsia.[3] Tennessee and Mississippi classifications are used to diagnose HELLP syndrome. According to the tennessee classification system for HELLP, hemolysis, increased LDH (> or =600 IU/L), increased AST (> or =70 IU/L), and low platelets (100 x10(9)/L) are the main diagnostic criteria for the syndrome. According to this, the HELLP syndrome may be full or partial. Together with the other two primary clinical criteria, the Mississippi classification evaluates the severity of the syndrome based on the low platelet count (LDH and AST). In comparison to the other two classes, Class I is the most severe andcarries a comparatively high risk of morbidity and mortality.[5,10,11] Class I: HELLP syndrome is characterized by a platelet count below 50,000/micro L. (LDH>or=600IU/L, AST>or= 70IU/L) Class II: HELLP syndrome is characterized by a platelet count of 50,000 to 100,000/ microL.(LDH>or=600IU/L,AST>or=70IU/L) Class III: HELLP syndrome is characterized bya platelet count of 100,000to150,000/microL. (LDH>OR=600IU/LAST>or=40IU/L).[5,10,11] There is a consensus that patients with HELLP syndrome have poor maternal and perinatal outcomes. The disease shall mark appears to be a multi system vasoconstriction with endothelial cell dysfunction that causes maternal fetal morbidity and mortality.

AIM & OBJECTIVES

To study maternal outcome in patients diagnosed with HELLP syndrome.

To study fetal outcome till 7 days of birth in mothers diagnosed with HELLP syndrome.

To evaluate perinatal outcomes according to severity of HELLP syndrome.

METHODOLOGY

Study Setting & Design:

A Prospective observation a longitudinal study was conducted in the department of obstetrics and Gynecology at tertiary care hospital, Bharati Hospital at Bharati vidyapeeth university, Pune for a period of two years.

Inclusion criteria

1. All antenatal patients more than 28 weeks with pree clampsia and eclampsia complicated with HELLP syndrome.
2. All antenatal patients diagnosed with HELLP syndrome.

Exclusion criteria

1. All patients with chronic hypertension.
2. Patients with known hematological disorders, renal, liver and auto immune disorders.
3. Women with less than 28 weeks of gestation.

Sample Size and Sampling

A total of 30 patients were included in the study and after matching inclusion and exclusion criteria the cases were taken in the department of OBGY.

METHOD

Written informed consent were taken from the patients diagnosed as HELLP syndrome complicating pre-eclampsia and eclampsia were included in the study after satisfying inclusion and exclusion criteria to participate in the study with detailed history, complete general examination, systemic and obstetric examinations was done. Laboratory investigations for confirmation of HELLP syndrome were done.

Data Collection

Registry based analysis of perinatal outcome in patients with HELLP Syndrome in tertiary centre. This is an prospective study conducted at a tertiary center. All women delivered between October 2020-2022 were included. Data was collected from OPD register, ward register and labour room register of tertiary centre. A proforma made regarding the data i.e., parity, mode of delivery and its indication,

gestational age, APGAR score, weight of the baby, NICU admissions.

Data Analysis

The collected data was coded and entered in Microsoft excel sheet. The data was analyzed using SPSS (statical package for social sciences) version 20.0 software.

Ethical Consideration

Protocol was submitted in Institutional Ethical Committee. Informed written consent from the participants were obtained after informing that the participation will be voluntary and there will be no harm to the participants in the study. Confidentiality of the information obtained from the patient was maintained and the identity of the patient was not revealed.

RESULTS

The present study was aimed to determine perinatal maternal and fetal outcomes in patients with HELLP syndrome. A total of 30 females with HELLP syndrome visiting tertiary care teaching hospital were included in the study. Out of total 30 patients with HELLP syndrome, majority 13(43.3%) of women were primigravida, followed by G2A1 7(23.3%), G2P1L1 3(10.0%), G3P1L1 and G3P1L1A1 2(6.7%)each, G3A2, G4P1D1A2 and G2P2L1 1(3.3%) each.

Table 1: Demographic and clinical findings

	Mean	SD
Age (years)	29.30	4.15
Gestational Age (weeks)	34.17	3.10
BMI (kg/m2)	26.25	2.54
Pulse (bpm)	92.67	8.72
Systolic BP (mmHg)	166.00	19.76
Diastolic BP (mmHg)	103.67	6.69
Weight of the baby in (kg)	2.27	0.70
Gestational week by uterine height	34.0	2.99

Table no 1: shows demographic and clinical findings of age, gestational age, Blood pressure and weight of the baby represented in tabular form using mean and standard deviation.

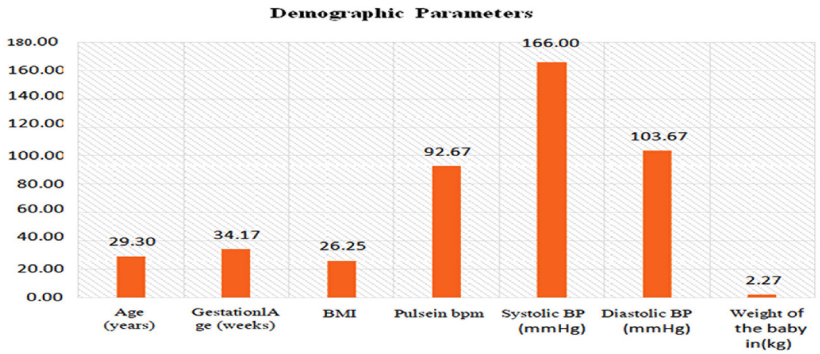


Table 2: Hematological parameters

	Mean	SD
Hemoglobin	10.76	1.68
TLC	10286.00	2877.97
Platelet count	52700.55	41424.86
PT(sec)	16.63	5.60
APTT(sec)	27.97	5.46
INR	1.00	0.38

Table no 2: depicts about the hematological parameters were estimate damong all the study population.

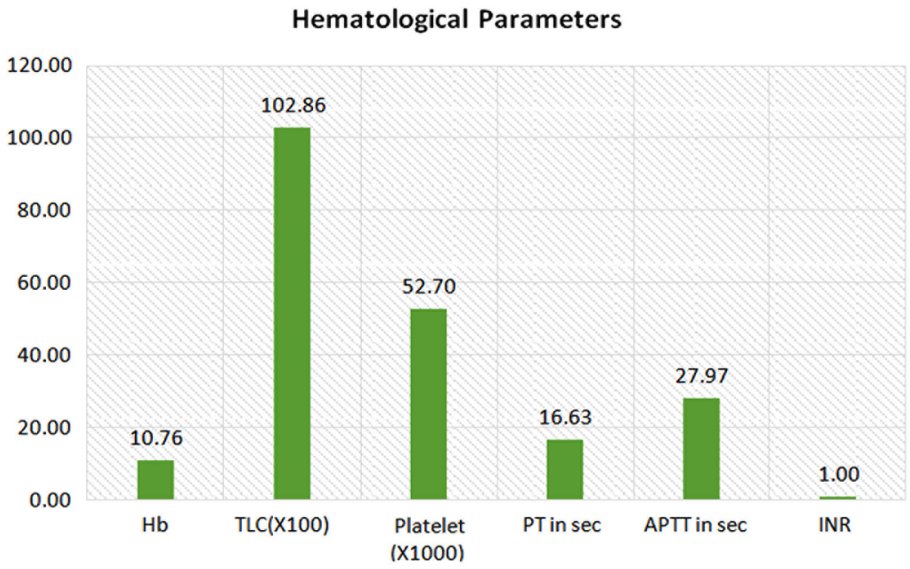


Table 3: Biochemical parameters

	Mean	SD
Urine Albumin	3.00	0.74
SGOT	180.70	97.51
SGPT	160.50	97.62
Bilirubin(Direct)	0.66	0.43
Total Proteins	3.74	1.49
Urine Protein Creatinine ratio	2.15	2.33
Uric acid	6.27	2.69
LDH	651.67	187.62

Table no 3: depicts the biochemical parameters were estimated among all the study population.

Table 4: Distribution of patients as per obstetric score

Obstetric Score	Frequency	Percent
Primigravida	13	43.3
G2A1	7	23.3
G2P1L1	3	10.0
G3P1L1	2	6.7
G3P1L1A1	2	6.7
G3A2	1	3.3
G4P1D1A2	1	3.3
G2P2L1	1	3.3
Total	30	100.0

Table no 4: depicts the distribution of patients as per obstetric score .

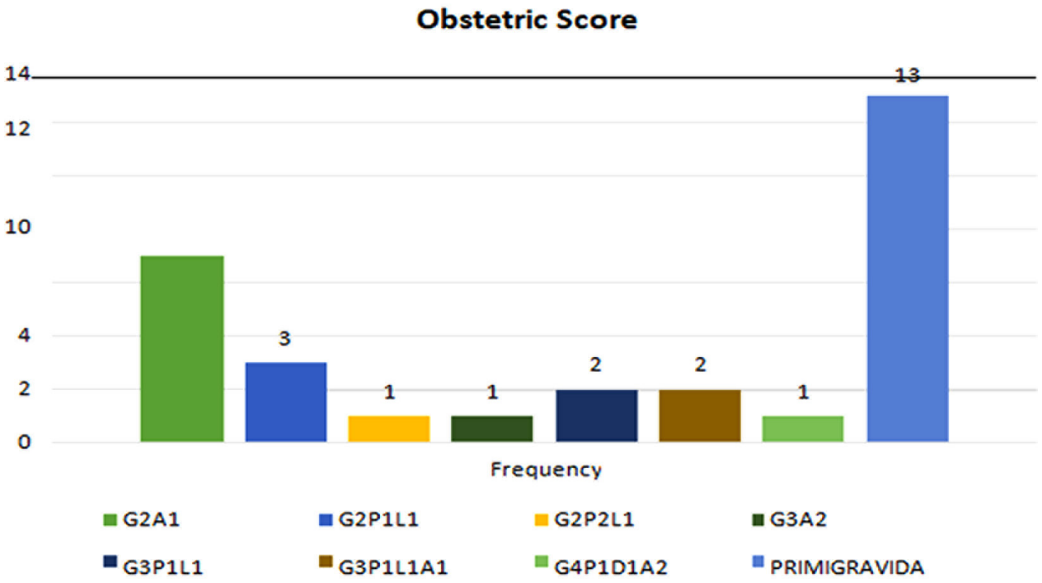


Table 5: Distribution of patients according to co-morbidities

Co-morbidities	Frequency	Percent
Pre eclampsia	7	23.3
GDM	5	16.7
Chronic hypertension	2	6.7
GDM, Hypothyroidism	2	6.7
Anemia	2	6.7
Hypothyroidism	2	6.7
Eclampsia	1	3.3
Epilepsy	1	3.3
IVF	1	3.3
Gestational hypertension	1	3.3
Pre eclampsia, Hypothyroidism	1	3.3
Total	30	100.0

Table no 5: depicts the distribution of patients according to co-morbidities .

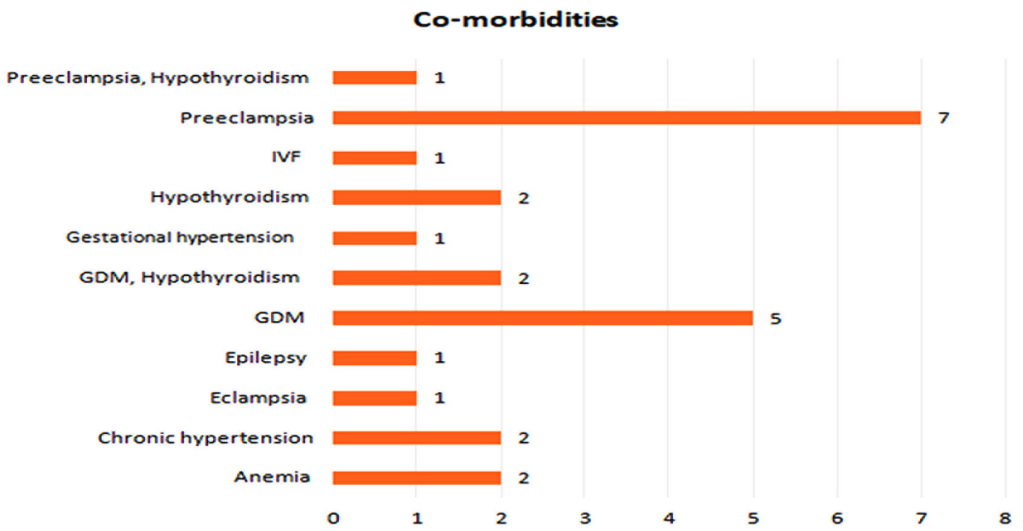


Table 6: Deep tendon reflexes

	Frequency	Percent
Brisk	24	80.0
Exaggerated	3	10.0
Normal	3	10.0
Total	30	100.0

Table no. 6: The deep tendon reflexes among study population were evaluated. Majority of women with HELLP syndrome had brisk (24 (80%) type of deep tendon reflexes, followed by exaggerated (3 (10%) and there were 3 (10%) women with normal reflexes.

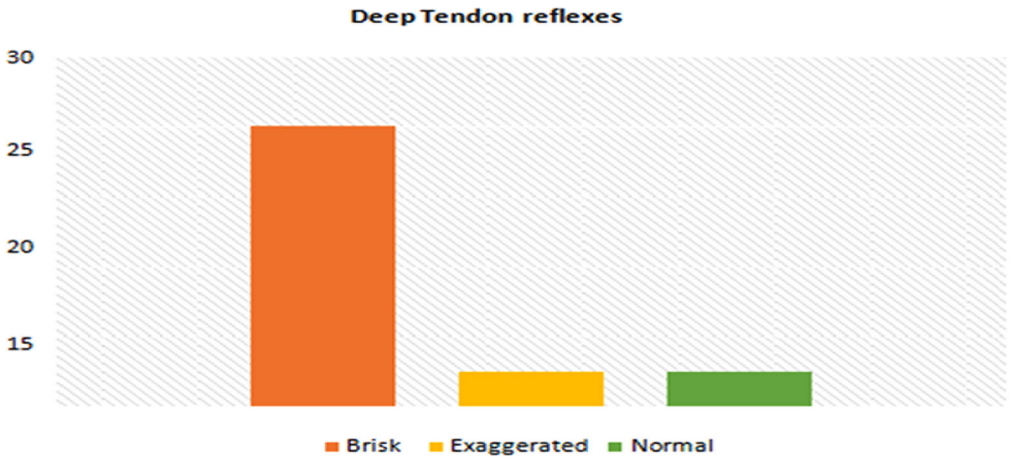


Table 7: Mode of delivery

Mode of delivery	Frequency	Percent
Vaginal	12	40.0
Cesarean	18	60.0

Table no. 7: The distribution of mode of delivery among 30 women with HELLP syndrome is recorded and shown in and presented graphically. In majority of women the mode of delivery was emergency LSCS

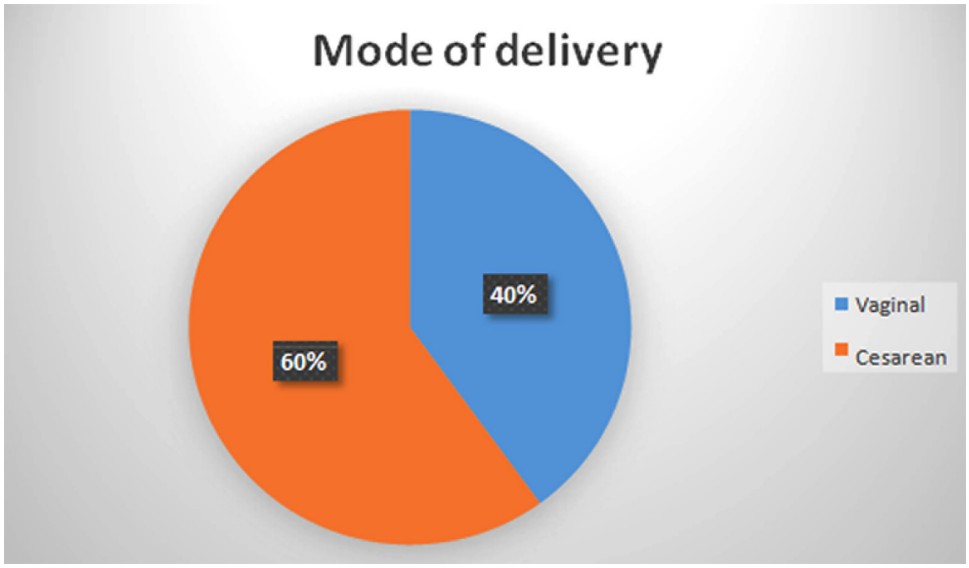


Table 8: Comparison of APGAR score

	Mean	SD
APGAR[1]	7.45	0.94
APGAR[2]	9.39	0.49

Table no 8 shows means of APGAR scores at 1 and 5minutes was recorded among 25 (83.33%) patients and score of 6 was reporte damong 5 (16.7%) of patients.

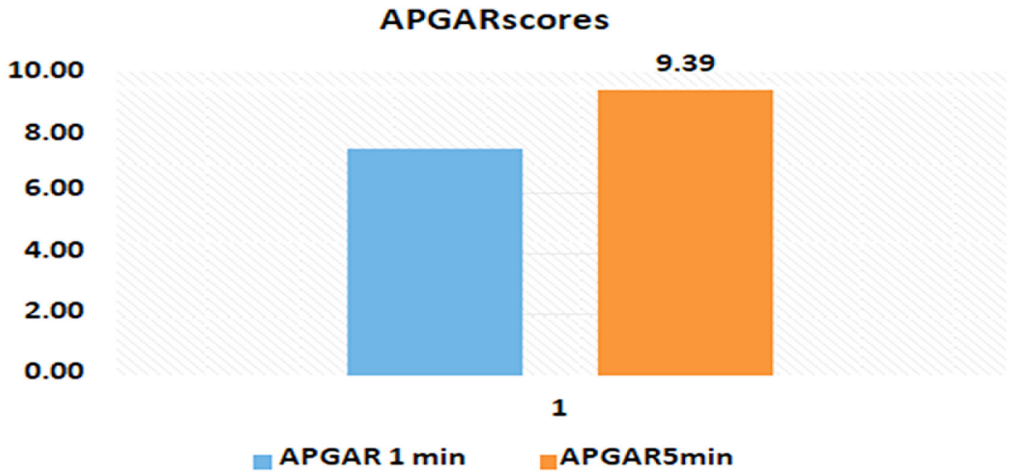
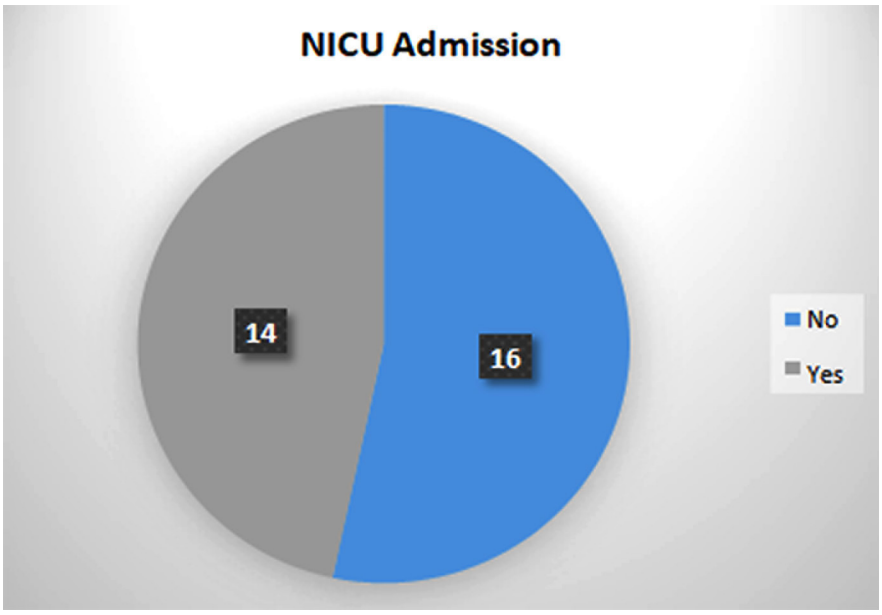


Table 9: Need of ICU admission for newborn

NICU Admission	Frequency	Percent
No	16	53.3
Yes	14	46.7
Total	30	100.0

Table no 9: depicts about distribution of newborn of HELLP syndrome patients was require damong 14/30 (46.7%) of newborn, while it was not required in 16 (53.3%)of newborn.



DISCUSSION

The incidence of the HELLP syndrome has been estimated to be 20 percent of severe pre-eclampsia.[14] It manifests itself around the middle of the second trimester of pregnancy and lasts until a few days after delivery. When the syndrome manifests in patients with severe pre-eclamp tictoxaemia or eclampsia, it is quickly diagnosed by the abnormal laboratory results. However, some patients may only exhibit a few or no pre-eclampsia symptoms while experiencing the HELLP syndrome.[12] Perinatal mortality (PNM) is as high as 30 to 40 percent, and reported maternal mortality (MM) ranges between 0 and 24 percent the literature.[15,35] Due to the systemic inflammatory response brought on by an ischemic reperfusion injury the adhesion of platelets to the activated and damaged endothelium initiates the coagulation cascade. Vasospasm, platelet aggregation, and additional endothelial damage are brough to by the release of throm boxane and serotonin from the platelets. Asa result, thrombocytopenia and high platelet usage occur.

Microangiopathic hemolytic anemia is brought on by the red blood cells' break down while travelling through these platelet fibrin rich capillaries. HELLP syndrome is brought on by hepatic necrosis and multi organ micro vascular injury.The delivery of the foetus brings the cascade to an end.[5,72]

Al though preeclampsia and eclampsia are more common in nulliparous patients than in their parous counter parts, hemolysis, elevated liver enzymes, and low platelets (HELLP) syndrome may be more common in multiparous patients.[15,104,105] One common explanation for the increased incidence of pre-eclampsiain nulli parous women is pregnancy related immunologic response of foreign foetal antigens derived from the father's sperm, which may be blunted by exposure to these antigens.[107] Out of a total of 30 patients with HELLP syndrome, there were 13(43.3%) primigravida, and 17 (56.7%) multigravida. The maternal and fetal outcome of pregnancy in pregnant women with HELLP, there were 37 (57.8%) primigravida and 27(42.2%) multigravidas. Pre-pregnancy hypertension, diabetes mellitus, assisted reproduction, chronic Cardiac conditions, chronic renal disease, asthma, systemic lupus erythematous, obesity, and chronic hepatic conditions were all pre-pregnancy comorbidities that were positively associated with HELLP syndrome.[93,5] Acute placental abruption, DIC, and sub sequent severe post partum bleeding, acuterenal failure, eclampsia, pulmonary edema etc. are more frequent and serious maternal complications.

When HELLP syndrome is diagnosed clinically and through laboratory testing, the primary go a list evaluate and stabilize the womans condition, particularly her coagulation dysfunction. Following that, cardiotocography, umbilical artery Doppler, and ultra sound biophysical profile should be used to assess the health of the foetus. Third, a choice must be made regarding whether immediate delivery is necessary.[6]

The delivery method should be chosen based on obstetric indicators. If the HELLP syndrome appears after the 34th week of pregnancy, or if the maternal or foetal health deteriorates, delivery is recommended. It is best give birth naturally. It is reasonable to induce cervical ripening first, and then labour if the cervix is unfavourable.[3] Regard less of gestational age, vaginal delivery is preferred for women who are in labour, have ruptured membranes, or have an infant who is presenting at the vertex. Inducing labour in women with healthy cervix (a Bishopscore of more than 4).[6] the rest being full term.

Current study shows that the vaginal delivery rate among HELLP syndrome patients was 34.9 percent and the caesarean delivery rate was 65.1 percent. Pre eclampsia and eclampsia may be more severe in the presence of HELLP syndrome, with a worsening of the maternal prognosis while fetal outcome seems unaffected, perinatal morbidities and mortalities are significantly increased in pregnancies complicated by the HELLP syndrome and are typically observed at very early gestational age in association with severe fetal growth restriction or abruption placentae.

Maternal mortality rates in women with HELLP syndrome were reported to be 11.25 percent, 11.9% infant mortality. The perinatal mortality rate was 41.25%. The most common fetal outcome was an IUD, followed by prematurity, RDS, IUGR, and neonatal death.

CONCLUSION

HELLP syndrome is associated with poor outcome for mother and fetus. Early registration and regular ANC checkups play a major role in early diagnosis and to reduce complications.

This study was done to reduce our efforts to reduce severe pre eclampsia associated with HELLP syndrome by under going regular antenatal care, early detection of pre-eclampsia and its prompt management and early detection of complications

with timely intervention.

ACKNOWLEDGEMENT

Author is thankful to the Head of Department, Guide, non-teaching and technical staff for extending their guidance and support to conduct the study. Author is also thankful to all the study subjects who participated in this study with out whom this study would not have been possible.

REFERENCES

1. Wilkerson RG, Ogunbodede AC. Hypertensive Disorders of Pregnancy. Emerg Med Clin North Am. 2019 May; 37(2):301-316.
2. Gupte S, Wagh G. Preeclampsia-eclampsia. J Obstet Gynaecol India. 2014 Feb;64(1):4-13.
3. HaramK, SvendsenE, AbildgaardU. The HELLP syndrome: clinical issues and management. A Review. BMC Pregnancy Child birth. 2009 Feb 26;9:8.
4. KhalidF, Tonismae T. HELLP Syndrome.[Updated 2022 May8]. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK560615/
5. Jiang R, Wang T,Li B, He J. Clinical characteristics and pregnancy outcomes of a typical hemolysis, elevate dliverenzymes, and low platelets syndrome: Acaseseries. Medicine (Baltimore). 2020; 99(18):e19798.
6. Rimaitis K, Grauslyte L, Zavackiene A, Baliuliene V, Nadisauskiene R, Macas A.Diagnosis of HELLP Syndrome: A 10-Year Survey in a Perinatology Centre. Int J Environ Res Public Health.2019; 16(1).
7. Gasem T, Al Jama FE, Burshaid S, Rahman J, Al Suleiman SA, Rahman MS. Materna land fetal outcome of pregnancy complicated by HELLP syndrome. The Journal of Maternal - Fetal & Neonatal Medicine. 2009 Dec 1; 22(12):1140-3.
8. Sibai BM, Ramadan MK, Usta I, Salama M, Mercer BM, Friedman SA. Maternal morbidity and mortality in 442 pregnancies with hemolysis, elevated liver enzymes, and low platelets (HELLP syndrome). Am J Obstet Gynecol.1993 Oct;169(4):1000-6.
9. Sibai BM, Taslimi MM, El-Nazer A, AmonE, Mabie BC, Ryan GM. Maternal-perinatal outcome associated with the syndrome of hemolysis, elevated liver enzymes, and low platelets in severe preeclampsia-eclampsia. American journal of obstetrics and gynecology.1986 Sep 1;155(3):501-7.
10. MagannEF, MartinJNJr.Twel vestep stoop timal management of HELLP syndrome. Clin Obstet Gynecol. 1999; 42:532.
11. KhalidF, Tonismae T. HELLP Syndrome [Updated 2022 May 8]. In: Stat Pearls [Internet]. TreasureIsland(FL): Stat Pearls Publishing ;2022Jan. Available from:https://www.ncbi.nlm.nih.gov/books/NBK560615/.