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Study of HELLP Syndrome and Maternal and Fetal Outcomes

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Abstract: ***Aim: HELLP Syndrome is a serious obstetric complication in pregnancy characterized by hemolysis, elevated liver enzymes and low platelet count. Incidence is 0.5-0.9% of all pregnancies and in 10-20% of cases with severe pre ecalmpsia and eclampsia. The aim of this study was to find out the incidence, clinical presentations, severity, complications and maternal and fetal outcome in patients of HELLP Syndrome. Methods: This is a retrospective study done at Civil hospital, asarawa, Ahmedabad. Clinical records of all patients with Pre eclampsia and eclampsia were studied retrospectively. Demographic data, clinical presentation, obstetric complication, mode of delivery and fetal outcome was studied. Results: During the study period there were 5197 deliveries.531 patients had pre eclamspia cases and 131 patients had eclampsia.26 patients developed HELLP Syndrome out of 663 patients. Majority of cases belonged to 21-25 yr of age and having gestational age between 32-37.6wks.53% patients had platelet count below 50, 000.26% of patients required ICU admission.76% patients were preterm. In Present study maternal mortality was 4 % and perinatal mortality was 8%. Conclusion: HELLP Syndrome is a severe variant and catastrophic complication of pre eclampsia and eclampsia. Early diagnosis and early referral to tertiary care unit for final management of HELLP Syndrome results in successful outcome.***

Keywords: Eclampsia, Pre eclampsia, Hellp syndrome

1. Introduction

HELLP Syndrome term given by Dr. Louis Weinstein in 1982 based on clinical features H (hemolysis), EL (elevated liver enzymes), LP (low platelet). It is progressive and severe form of pre eclampsia and eclampsia. It is classified according to criteria developed by university of Mississippi 2006 classification based on platelet count into three subtype class-I, class-II and class-III.2 The three variables are platelet count (PLT), serum aspartate aminotransferase (SGOT/AST), serum alanine aminotransferase (SGPT/ALT), serum lactate dehydrogenase (LDH). The incidence of HELLP Syndrome in the present retrospective study is 0.5% (15/5197 deliveries) at SKH Karamsad and incidence of HELLP Syndrome among pre eclampsia and eclampsia is 3.9% which is less than study Lakshmi et al 14.7%. The pathophysiology is vasospam and endothelial dysfunction, fibrin deposition resulting in varied degree of hepatic ischemic damage, microangiopathic hemolytic anemia and thrombocytopenia. HELLP Syndrome occurs in about 0.5-0.9 % of all pregnancies and in 10-20% of cases with severe pre ecalmpsia and eclampsia. HELLP Syndrome develops in about 70% cases before delivery, with a peak frequency between 27^{th}-37^{th} week of gestation, 10% occur before 27^{th} week, 20% beyond the 37^{th} week pregnancy. In post partum period, HELLP Syndrome develops within the first 48 hours after delivery.

The onset of HELLP syndrome is rapid, variable and sometimes atypical, so the diagnosis is generally delayed for 5-7 days. Many of them are misdiagnosed with disorders like cholecystitis, oesophagitis, gastritis, hepatitis, viral fever or idiopathic thrombocytopenia. Typical clinical symptoms are right upper quadrant pain abdomen may be colicky, intterminant associated with malaise few days before actually diagnosing it to be HELLP Syndrome.

2. Method

This is a retrospective study done at Civil hospital, Ahmedabad for a period of 28 months i. e June 2019 to September 2021, including 5197 deliveries and 531 mild and severe preclamspia cases and 131 eclampsia cases out of which 26 cases developed HELLP Syndrome.

Inclusion criteria

- Pregnant women with severe pre eclampsia and eclampsia >20 weeks with abnormal laboratory findings.

Exclusion criteria

- Pregnant women with other disorders like viral hepatitis, Gastroenteritis, pancreatitis.
- Pregnant women with diffrential diagnosis like HELLP Syndrome
- Pregnant women with chronic hypertension
- Gestational age less than 20 weeks

The selected cases were studied with history, clinical data, and detailed laboratory investigations done including histogram, peripheral blood smear, coagulation profile, liver function test, renal function test values which have been recorded and HELLP Syndrome cases were classified according to Mississippi classification.

Table 1: Mississippi classification (university of mississippi 2006 criteria)

Mississippi classification
Class I Platelet count ≤50,000/mm^3 Sr.AST or Sr. ALT ≥70 IU/L Sr.LDH ≥600 IU/L
Class II Platelet count >50,000 –≤100,000/mm3 Sr.AST or Sr. ALT ≥70 IU/L Sr. LDH ≥600 IU/L
Class III Platelet count >100,000 to ≤150,000/mm^3 Sr.AST or Sr. ALT ≥40 IU/L Sr.LDH ≥600 IU/L

Mississippi classification is based on platelet count accordingly classified into class-I-less than 50, 000/mm^3; class-II->50, 000 to less than 1, 00, 000/mm^3; class-III->1, 00, 000 to 1, 50, 000/mm^3

3. Results

In present retrospective study we had analysed 5197 total deliveries that take place at Civil hospital Ahmedabad in which 663 pt had pre eclampsia and eclampsia and total 26 pt had diagnosed as HELLP Syndrome and variants.

As per Mississippi classification, 14 cases (53%) belong to class 1, 9 cases (34%) belong to class 2 and 3 cases (13%) belong to class 3.

All cases referred from either primary health centre, community health centre other private hospital or civil hospital.

Table 2: No. cases of according to Mississippi classification

Total	Class 1	Class 2	Class 3	Total
Pre eclampsia	3 (12)	8 (30)	11 (42%)	22 (84%)
Eclampsia	0	1 (4)	3 (12)	4 (16)

39% cases were in the age group of 21-25years (Table 3).

In Our study 62% primigravida had class 1 syndrome and 46% multigravida had class 1 and 46% multigravida had class 2 syndrome (Table 4). In our study, 20 cases out of 26 had develop HELLP syndrome between 32-37.6 weeks of gestation (Table 5). In This study all 26 cases developed HELLP Syndrome in antenatal period.

Table 3: No. cases according to age group

Age (yrs)	Class 1	Class 2	Class 3	Total
15-20	1	1	1	3
21-25	5	4	1	10
26-30	5	0	0	5
>30years	2	5	1	8

Table 4: No. of cases according to gravida

Gravida	Class 1	Class 2	Class 3	Total
Primi	8 (62%)	3 (23%)	2 (15%)	13 (50%)
Multi	6 (46%)	6 (46%)	1 (8%)	13 (50%)

Table 5: No. of cases according to gestational age

Gestational age	No. of cases	Class 1	Class 2	Class 3
>28-31.6	3	2	1	0
>32-37.6	20	11	6	3
>38	3	1	2	0

According to the laboratories 70% cases of HELLP syndrome had LDH value more than threshold, 35% cases had S. bilirubin level more than 2mg/dl and only 4% cases had S. creatinine level more than >1.2mg/dl.

Table 6: No. of cases according to laboratory findings

SGOT >70IU/L	SGPT >70IU/L	LDH >600IU/L	S. BILIRUBIN >2mg/dl	S. CREATININE >1.2mg/dl
20	11	18 (70%)	9 (35%)	1 (4%)

Table 7: No. of cases according to platelet count by Mississippi classification

Total No of Cases	Class 1	Class 2	Class 3
26	14 (53%)	9 (35%)	3 (12%)

Class 1-14 cases (53%), Class 2 – 9 cases (35%) and Class 3 – 3 cases (12%) Table – 7. Maternal morbidity in the form of Eclampsia, pulmonary edema, abruption, severe anemia, Renal failure, Pleural effusion, Press syndrome, peripartum cardiomyopathy, coagulopathy, puerperal sepsis and end organ damage (retinal detachment).1 pt who underwent FT forcep delivery died in ICU due to intra cranial hemorrhage at brain stem level.

Table 8: Cases according to maternal outcome

Complication	No. of cases
Eclamspia	2
Eclampsia + Abruption	1
AKI+HD+Sepsis	1
Eclampsia +PRESS +PPH	1
Severe anemia	12
PPH	5
Invasive ventilatory support	7
Pleural effusion +Ascities	2
Peripartum cardiomyopathy	1
Obs Hystectomy	1
Coagulopathy	2
Retinal detechment	1
Intracranial hemorrhage	1

AKI=acute kidney injury
PPH = Postpartum hemorrhage
HD= Hemodialysis
PRESS= Posterior reversible encephalopathy syndrome

In 26 cases of HELLP Syndrome only 1 pt didn't develop any complication. Other 25 cases had various maternal complication out of them 12 pt had develop severe anemia, 1 pt develop renal failure and had underwent Hemodialysis.2 pt had develop end organ damage in which 1 pt had develop macular retinal detachment due to uncontrolled hypertension and 1 pt develop Intracranial hemorrhage due to uncontrolled hypertension and this pt died. Maternal morbidity is 96% and Maternal mortality is 4%.

Table 9: Perinatal outcome

Complications	Total No. of cases
Term	6
Preterm	20
IUGR	7
Still birth	2
IUFD	2
NICU admission	13
ND	13
LSCS	13

Total number of live birth was 22/26 (85%); out of Total Deliveries 20 babies was preterm 6 babies was term.2 babies were born still birth and 2 babies was iufd. Total NICU Admission was 13/22 live delivery so Perinatal morbidity rate is 59%. And Perinatal mortality is 8%. Prematurity and low birth weight is commonest cause of perinatal mortality and morbidity.

In our study Maternal Morbidity is 96% and Maternal Mortality is 4% and Perinatal Morbidity is 59% and Perinatal Mortality is 8%.

4. Discussion

HELLP Syndrome is a life threatening complication, considered to be a severe variant of preeclampsia and eclampsia. The incidence of HELLP Syndrome in the present retrospective study is 3.9% (26/ 663 cases of preeclampsia and eclampsia) which is comparatively higher than in the study of sowjanya et al 15.5% and 6.5% in the study of Ara S et al.[3, 4] Early identification of risk factors in pregnancy and timely intervention gives better maternal and perinatal outcome. In the study of 26 cases of HELLP Syndrome all cases referred from either phc, chc or civil hospital. In study of 26 cases of HELLP Syndrome 22 cases had pre eclampsia and 4 cases had eclampsia.13 cases belonged to primigravida and 13 cases belonged to multigravida.

In 26 cases of HELLP Syndrome 25 cases were antepartum and 1 case diagnosed post partum which is comparatively higher than study of Ara S et al 75% and majority 20 cases (77%) were between >32 and 37.6weeks gestational weeks comparable to Vigil-de Gracia P 40%. In all these cases 13 cases (50%) were delivered vaginally and 13 cases (50%) delivered by caesarean section. The main complications in our study were severe anemia, coagulopathy, renal failure, PPH, pleural effusion, ascities, PPCM, end organ damage i/v/o retinal detachment and intracranial hemorrhage, PRESS syndrome, abruption, sepsis. The outcome of HELLP syndrome depends on the severity, timely intervention, availability of tertiary care facilities like ICU, dialysis, ventilatory support and equipment and availability of blood and blood products. In this study, 7 cases needed intensive care management; and remaining all cases were managed at HDU (High dependancy unit) of civil hospital, Ahmedabad of which 25 cases were discharged home healthy and 1 case death occurred.25 cases out of 26 cases of HELLP Syndrome were treated with platelet transfusion, FFP and other blood products.

In the present study, the maternal mortality was 1 (3.8%) because of intracranial hemorrhage. It is comparable to sibai BM et al (1.8%), Isler CM et al (7.8%), Vigil-de Gracia P (2.3%), Visser W et al (14.1%).6[8, 10]

In our study 2 (7.6%) still birth cases and 2 (7.6%) IUFD cases present. Due to lack of follow up of NICU admission of 13 cases perinatal mortality could not be counted. In other study sibai BM (33.3%), Megann EF et al (23.3%), Liu et al (42%), Visser W (14.1%), Sowjanya et al 35.33%.8[10] The main cause for perinatal death in reference study was prematurity 49.62% in Ara S, Sowjanya et al 35.33% followed by birth Asphyxia. Expectant management, appropriate intervention, NICU facility will improve the perinatal outcome. In our present study, vaginal delivery was done in 13 cases and 13 cases delivered by caesarean section as active management was taken in the form of termination of pregnancy irrespective of gestational age as delivery is the definitive management to prevent further complications and to save the mother. Caesarean section rate in the present study was 13 cases (50%). It is comparable to 71% of Vigil-de Gracia P, 63% Hadded O et al.[7, 11]

5. Conclusion

Early registration and regular antenatal checkups play a major role in early diagnosis 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 dreadful obstetric complication which needs multidisciplinary team approach, availability of life saving facilities like mechanical ventilators, dialysis equipment and blood products 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 still the cases is shifted to tertiary care centre. The Global mortality rate of HELLP Syndrome has been reported to be as high as 25%. That's why it is critical for expecting mothers to be aware of the condition and its symptoms, so they can receive early diagnosis and treatment. Doctors should enhance their skills in antenatal care to identify high risk factors at primary health canter and community health centre.

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