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Maternal and Perinatal Outcome in Patients with HELLP Syndrome

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Objectives: A. To study maternal outcome in patients diagnosed with HELLP syndrome. B. To study perinatal outcome in patients with HELLP syndrome.

Keywords: HELLP syndrome, maternal and perinatal outcome.

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Maternal and Perinatal Outcome in Patients with HELLP Syndrome

Rohit Chandrakant Kamble [α] & Nilima. S. Gupte [σ]

Abstract- HELLP syndrome (haemolysis, elevated liver enzymes, and low platelets) is a component of hypertensive disorders of pregnancy which is associated with significant maternal as well as perinatal morbidity and mortality. Maternal mortality is due to consequences such as pulmonary oedema, renal failure, disseminated intravascular coagulation and subcapsular liver hematoma. Perinatal mortality appears to be primarily related to the gestational age at the time of delivery. This study evaluates the maternal and perinatal outcome in HELLP syndrome so that the management is improved resulting in reduced mortality and morbidity.

Objectives: A. To study maternal outcome in patients diagnosed with HELLP syndrome. B. To study perinatal outcome in patients with HELLP syndrome.

Methods: This study was conducted in department of obstetrics and gynaecology of medical college and tertiary health care centre. A consecutive series of 56 pregnant women above 24 weeks of gestational age with HELLP syndrome were admitted at a tertiary care hospital, during the period of 24 months from 30th November, 2015 to 31st October, 2017. History, clinical data, detailed laboratory investigations were studied and categorized by Mississippi classification for better analysis of complication and outcome in HELLP syndrome.

Results: Total 56 cases of HELLP syndrome were studied. Majority of the patients were primigravidae belonging to lower socio-economic status, which were unbooked with no proper antenatal care. 60.71% of the patients had maternal complications. The complications were severe anemia in 21.43%, renal complication in 21.43%, DIC in 19.64%, abruption 14.29%, respiratory complication 7.15%, ascites 3.57% and septicemia in 3.57% and maternal mortality rate was 14.28%. A high incidence of perinatal morbidity and mortality (46.43%) was seen. Major contributing factors being prematurity, fetal growth restriction and birth asphyxia.

Conclusion: HELLP syndrome is associated with increased maternal and perinatal morbidity and mortality. Once diagnosis is made, it warrants aggressive intervention with control of blood pressure, antiseizure prophylaxis and corticosteroid treatment and delivery. We have to increase grass root level antenatal care. Early detection and prompt management of pre-eclampsia is the most important approach to the prevention of HELLP syndrome.

Keywords: HELLP syndrome, maternal and perinatal outcome.

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I. Introduction

Every woman wishes to have a healthy pregnancy which culminates in a healthy baby and a healthy mother. Unfortunately, some women develop dreaded complications that may result in adverse obstetric outcomes. These include Hypertensive disorders of pregnancy, Pre-eclampsia, Eclampsia and HELLP syndrome[1]. Pre-eclampsia occurs in 5-10% of pregnancies[2]. The HELLP syndrome (haemolysis, elevated liver enzymes, and low platelets) is a variant of severe pre-eclampsia that is associated with significant maternal and perinatal morbidity and mortality[3]. HELLP syndrome develops in 6-12% of women with preeclampsia or eclampsia accounting for 0.4-0.7% of all pregnancies[4]. Maternal mortality is due to consequences such as pulmonary oedema, renal failure, disseminated intravascular coagulation and subcapsular liver hematoma[5]. Perinatal mortality appears to be primarily related to the Maternal and Perinatal Outcome in Patients with HELLP Syndrome gestational age at the time of delivery[6]. HELLP syndrome is regarded as high risk for the mother and neonate compared to pre-eclampsia. Early diagnosis and identification of complication of HELLP syndrome and timely intervention form the main strategy of management.[7]

II. Aims and Objectives of the Study

- To study maternal outcome in patients diagnosed with HELLP syndrome
- To study perinatal outcome in these patients with HELLP syndrome.

III. Methodology

This was prospective observational study done over a period of 24 months i.e., Nov. 2015 to Oct. 2017. Total 56 cases of HELLP syndrome were studied. This study was conducted in department of obstetrics and gynaecology of medical college and tertiary health care centre

a) Inclusion Criteria

- All antenatal patients with pre-eclampsia and eclampsia complicated with HELLP syndrome.

b) Exclusion Criteria

- All patients with chronic hypertension

- Patients with any systemic illness
- Patients with hematological disorders
- Patients with renal and liver disorders
- Patients with autoimmune disorders

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

HELLP syndrome cases were classified according to mississsippi classification

c) *Mississippi Classification (University of Mississippi 2006 Criteria)*

Class I	Platelet < 50,000/mL AST or ALT > 70 IU/L LDH > 600 IU/L
Class II	Platelet 50,000-1,00,000/mL AST or ALT > 70 IU/L LDH > 600 IU/L
Class III	Platelet 1,00,000-1,50,000/mL AST or ALT > 40 IU/L LDH > 600 IU/L

IV. Results

The following data was obtained from the present series of 56 cases studied at tertiary care hospital, in department of obstetrics and gynaecology from 30th November, 2015 to 31st October, 2017.

Table 1: A classification of HELLP as per Mississippi's classification Class

Class	No of Patients	Percentage
Class 1	10	17.86%
Class 2	23	41.07%
Class 3	23	41.07%
Total	56	100.00%

Majority of the cases belonged to class II and class III HELLP, 23 each (41.07%) followed by class I HELLP, 10 (17.86%).

Table 2: No. of cases according to age group

Age Group in years	Class 1	Class 2	Class 3	Total	%
< 20	2	3	5	10	17.86%
20-24	4	13	10	27	48.21%
25-29	1	7	6	14	25.00%
30-34	2	0	2	4	7.14%
>35	1	0	0	1	1.79%
Grand Total	10	23	23	56	100.00%

48.21% of cases were in the age group 20-24 years (Table 2).

Table 3: No. of cases according to parity

Gravida/ Para	Class 1	Class 2	Class 3	Total	%
Primi	5	12	16	33	58.93%
Multi	5	11	7	23	41.07%
Total	10	23	23	56	100.00%

In present study 58.93% were primigravidae, while 41.07% of patients were multiparous (Table 3). In our study 24 (42.85%) cases of HELLP syndrome were seen of more than 37 weeks of gestation. (Table 4).

Table 4: No. of cases according to gestational age

	Class 1	Class 2	Class 3	Total	%
< 28 weeks	3	1	5	9	16.07
29- 32 weeks	1	5	2	8	14.28
33- 36 weeks	3	7	5	15	26.78
> 37 weeks	3	10	11	24	42.85

Table 5: Distribution of cases according to severity of hypertension

Clinical signs		Class 1	Class 2	Class 3	Total	%
BP	Mild	2	8	10	20	35.71%
	Severe	8	15	13	36	64.29

In present study majority of the patients presented with severe preeclampsia and there were 20 cases (35.71%) with mild pre-eclampsia.

Maximum patients i.e., 58.92% of HELLP syndrome had platelet count less than 1lakh/ml. Serum lactate dehydrogenase was raised in all patients with HELLP syndrome. All patients with HELLP syndrome had raised serum AST was 70IU/L.55.36% (31 cases) had bilirubin levels > 1.2 mg/dl while 44.64% (25 cases) had bilirubin levels < 1.2 mg/dl.25% (14 cases) had abnormal renal function parameters.67.86% (38 cases) had serumuric acid levels > 6 mg/dl 33 cases (58.93%) required transfusion of blood or components while 23 cases (41.07%) did not require any blood and blood products.

Table 6: No. of cases according to laboratory investigations

	Class 1	Class 2	Class 3
platelet	10	23	23
LDH >600 IU/L	25	20	11
AST/>70 IU/L	30	16	10
UA>6mg	8	15	15
Bilirubin >1.2	8	14	9
Srcreat>1.2mg/dl	5	4	5

Table 7: Distribution of cases according to blood and blood products

Blood and blood products Transfusion	Class 1	Class 2	Class 3	Grand Total	%
Not Transfused	0	8	15	23	41.07%
Transfused	10	15	8	33	58.93%
Grand Total	10	23	23	56	100.00%

Table 8: Cases according to maternal outcome

	Class 1	Class 2	Class 3	Total	%
Anemia	4	5	3	12	21.43
Pum edema	1	1	0	2	3.57
Resp infection	1	1	0	2	3.57
Oliguria	1	1	0	2	3.57
Hematuria	1	1	1	3	5.36
Renal failure	4	3	0	7	12.50
Abruption	4	3	1	8	14.29
DIC	8	3	0	11	19.64
Ascites	0	1	1	2	3.57
sepsis	1	1	0	2	3.57
Death	2	4	2	8	14.28

Table 9a: Perinatal outcome

	Class 1	Class 2	Class 3	Grand Total	%
Pre Term	11	10	5	26	46.43%
APGAR <6	16	12	7	35	62.50%
IUGR	9	7	1	17	30.36%
MAS	3	2	2	7	12.50%
Sept	0	1	0	1	1.79%
NICU admission	11	10	4	25	44.64%

Table 9b: Perinatal outcome

	Class 1	Class 2	Class 3	Total	%
Live birth	6	17	13	36	64.29
Still birth	3	5	6	14	25.00
IUFD	1	1	4	6	10.71
END	1	3	2	6	10.71
Take home	5	14	11	30	53.57

V. Discussion

HELLP syndrome is life threatening complication considered to be variant of preeclampsia and eclampsia. Early identification of risk factors in pregnancy and timely intervention gives better maternal and perinatal outcome.

In our study mean maternal age was 23.09 ± 4.45 (18-35 years) which was comparable to James N Martin *et al.,*[8] (1991) 22.9 ± 5.5 (14-42 years).

Majority of the patients in the present study were primigravidas (33 cases) 58.93% comparable to Sibai BM Taslim *et al.,*[2] (1986) 52% and Martin JN *et al.,*[9] (1999) 51%.

Systolic BP in this study was class I 138±4, class II 151±18 and class III 175±12 which were comparable to Martin JN *et al.,*[8] class I 156±24, class II 158±22 and class III163±19.

Majority of the patients in this study delivered vaginally 83.93% which was higher than Vigil P de Gracia[7] 29% and Shafika Banoo[15] 60%.

Table 10: Maternal outcome

Complications	Imir GA[10]	Vigil P de 7 Gracia[7]	Fernazdez[11]	Hadded et al[12]	Ahmed et al[13]	Present study
DIC	17%	-	38%	8%	62.5%	19.64%
Respiratory	25%	-	1.1%	10%	-	7.15%
ARF	25%	12%	4%	5%	18.75%	12.5%
Ascites	14%	-	-	5%	-	3.57%
Abruptio placenta	10.9%	12%	28%	10%	25%	14.29%
Hematuria	4.6%	22%	-	-	-	5.36%
Sepsis	3.1%	-	-	-	-	3.57%

Majority of the HELLP were full term i.e., gestational age >37 weeks (42.85%) comparable to Vigil P de Gracia7 40%.

Table 11: Perinatal outcome

Complications	Kim YH[6]	Sibai BM et al[2]	Svendson HK[14]	Imir GA[10]	Present study
NICU admission	85.7%	28.3%	-	-	44.64%
Preterm	-	-	70%	-	46.43%
IUGR	47.6%	31.6%	38.6%	54.7%	30.36%
Still birth	-	19.5%	-	-	25%
IUD	4.8%	-	-	18.8%	10.71%
APGAR <6	66.7%	28.5%	-	37.5%	62.5%
RDS	38.1%	-	40%	23.4%	-
Sepsis	85.7%	-	-	7.8%	1.79%
Neonatal death	19.5%	17.4%	-	20.3%	10.71%

Cesarean delivery in present study was 16.07% which was lesser than Vigil P de Gracia[7] 71% and Shafika Banoo[15] 40% and Hadded *et al.,*[12] 63%. Majority of the indication for cesarean section were fetal distress, CPD, previous cesarean section and worsening maternal parameters with failed induction.

In this present study transfusion of bold and blood products wasrequired in 58.93% which was comparable with Imir GA[10] 62.5% and higher than Vigil Pde Gracia[7] 29%.

In the present study, DIC 19.64% was lesser than Ahmed *et al.,*[13] 62.5%, Fernandez[11] 38.1%, but higher than Hadded *et al.,*[12] 8%. Abruptio in the present study 14.29% was comparable to Hadded *et al.,*1210%, Imir GA10 10.9%, Vigil P de Gracia[7] 12%, but lesser than Ahmed *et al.,*[13] 25% and Fernandez[11] 28%. This is because of early recognition and prompt treatment of severe preeclampsia with HELLP. Acute renal failure in the present study 12.5% was comparable to Hadded *et al.,*[12] 5%, Fernandez[11] 4%, but lesser than Imir GA[10] 25%,

Ahmed *et al.,*1318.75% and Vigil P de Gracia[7] 12%. Ascites in the present study was 3.57% comparable to Hadded *et al.,*[12] 5%, but lesser than Imir GA[10] 14%. Sepsis in the present study was 3.57% comparable to Imir GA[10] of 3.1%.

In this present study, maternal mortality was 14.28% and was higher than Imir GA[10] 7.8% and Ahmed *et al.,*[13] 6.25%. It is higher than Hadded *et al.,*[12] 1%, Vigil P de Gracia[7] 2.3%, Haram K *et al.,*[14] 2.5% and Sibai BM2 1.8%.

In this present study, preterm babies were 26 i.e 46.43% was lesser than Svendson H[14] 70%.

For APGAR <6, 62.5% in this study was comparable to Kim YH[6] 66.7%, IUGR 30.36% comparable to Sibai *et al.,*[2] 31.6%, still birth 25% comparable to Sibai *et al.,*[2] 19.5%. Neonatal death in this study 10.71% was comparable to Sibai *et al.,*2 17.4%. IUD 10.71% in this study was lesser than Imir GA10 18.8% and higher than Kim YH6 4.8%.

In this present study, perinatal mortality (46.43%) was comparable to Gul *et al.,*[16] 42%, but higher than Sibai BM2 33.3%, Magann EF *et al.,*[17] 23.2% and Willey Visser[18] 14.1%. Majority of the causes of Perinatal mortality in our study were prematurity (46.43%), still birth (25%), SGA (30.36%) and birth asphyxia (83.33%).

VI. Conclusion

In our study done over a period of 2 years, there were 56 cases of HELLP syndrome. Once the diagnosis of HELLP syndrome has been made, it warrants aggressive intervention with control of blood pressure, antiseizureprophyl axis, corticosteroid treatment for fetal lung maturity and expeditious delivery. HELLP syndrome, among pre-eclampsia and eclampsia cases is associated with significant maternal morbidity and mortality and perinatal mortality and morbidity. The present study shows maternal mortality of 14.28% but still perinatal mortality constitutes 46.43%. In order to reduce the maternal and perinatal mortality, It is highly desirable that obstetric care providers at all levels become knowledge able about the early diagnosis and management of HELLP syndrome.

We have to intensify our efforts to reduce preeclampsia with HELLP syndrome from the grass root level with regular antenatal care, early detection of pre-eclampsia and its prompt management and early detection of complications with timely intervention. This will go a long way in preventing this catastrophic disease.

Vigilant fetal monitoring (including electronic fetal monitoring), prompt timely intervention at the periphery and improvement of neonatal care facilities with good prenatal care at the foremost are needed to reduce the perinatal mortality in the present study.

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