A CLINICAL STUDY OF HELLP SYNDROME

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ABSTRACT

BACKGROUND

HELLP syndrome is an acronym for Haemolysis (H), Elevated Liver Enzymes (EL) and Low Platelet (LP). This is a rare complication of preeclampsia (10-15%). HELLP syndrome may develop even without hypertension. This syndrome is manifested by nausea, vomiting, epigastric or right upper quadrant pain along with haematological changes. Parenchymal necrosis of liver causes elevation in hepatic enzymes (AST and ALT >70 IU/L, LDH >600 IU/L) and bilirubin (>1.2 mg/dL). There may be subcapsular haematoma formation (which is diagnosed by CT scanning) and abnormal peripheral blood smear. Eventually, liver may rupture to cause sudden hypotension due to haemoperitoneum. Periportal haemorrhagic necrosis of the liver occurs due to thrombosis of the arterioles. The necrosis is seen at the periphery of the lobule. There may be subcapsular haemorrhage. Hepatic insufficiency seldom occurs because of the capacity and regenerative ability of liver cells. Liver function tests are especially abnormal in women with HELLP syndrome. A sincere effort has been put to study the HELLP syndrome incidence and its clinical prognosis and to understand its outcome.

MATERIALS AND METHODS

Forty patients were selected whose BP was recorded more than 140/80 mmHg after twenty weeks of gestation. Peripheral smear were taken to check for haemolysis or elevated indirect bilirubin or elevated LDH levels were checked, elevated liver enzymes and decreased platelet count <1,00,000/cumm was noted. Incidence of HELLP syndrome was found and various clinical features presented and the complications faced by the patients were recorded. Prompt treatment was given and the outcome of the disease was noted. All the statistical analysis was done using the latest SPSS software 2015 (California).

RESULTS

The mean age of the study group was found to be 26.72 years with a standard deviation of 5.62 years. In our study, the mean haemoglobin level was found to be 6.41 gm%, which is very low compared to the values got by the study conducted by Ashwini Mallesara et al.[1] This may be due to the fact that the other study managed to get 320 patients, whereas in our study only 40 patients were considered. The mean platelet count and reticulocyte count in our study was found to be 1.48 lakhs/cc^3 and 89600/cc^3, respectively. Again, the values that we got were very less compared to that of the other study. This maybe purely due to the number difference or we in our study were able to study the more serious variety of the disease. Six patients were confirmed to have haemolysis in our study. The other biochemical values that we got in our study is as follows; mean bilirubin was found to be 3.42 mg/dL, mean AST was found to be 152.59 micrograms per litre, mean ALT was found to be 149.94 micrograms per litre and mean LDH levels were found to be 1022 micrograms per litre. The foetal complications that we recorded were intrauterine growth retardation, intrauterine death, preterm delivery, acute respiratory distress syndrome. The other study did not find any of the acute respiratory distress syndrome even though they have reported preterm delivery pointing towards the fact that the steroids have been given to the mother well in advance so as to make the lungs of the foetus matured. The maternal complications reported by us are DIC, hepatic failure, abruptio placenta, sepsis and stroke.

CONCLUSION

This study shows how dangerous this disease is to both the mother and the child. Even though, the pregnancy is thought to be a physiological process, it has its own complications.

KEYWORDS

HELLP Syndrome, Hepatic Enzymes, Low Platelets, Sepsis, Periportal Haemorrhage.

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BACKGROUND

HELLP syndrome is an acronym for Haemolysis (H), Elevated Liver enzymes (EL) and Low Platelet (LP). This is a rare complication of pre-eclampsia (10-15%). HELLP syndrome may develop even without hypertension. This syndrome is manifested by nausea, vomiting, epigastric or right upper quadrant pain along haematological changes. Parenchymal necrosis of liver causes elevation in hepatic enzymes (AST and ALT >70 IU/L, LDH >600 IU/L) and bilirubin (>12

gm/(L). There may be subcapsular haematoma formation (which is diagnosed by CT scanning) and abnormal peripheral blood smear. Eventually, liver may rupture to cause sudden hypotension due to haemoperitoneum. Periportal haemorrhagic necrosis of the liver occurs due to thrombosis of the arterioles. The necrosis is seen at the periphery of the lobule. There may be subcapsular haemorrhage. Hepatic insufficiency seldom occurs because of the capacity and regenerative ability of liver cells. Liver function tests are especially abnormal in women with HELLP syndrome. A study done by Sibai B M et al in 1985 reported an incidence of HELLP as 9.7% in his study.[2] Another study done in 1993 reported the incidence as 20% of women preeclampsia.[3] Chances of increased risk of maternal death (1%) was reported by another study.[4] Cardiopulmonary complications were reported more in patients who had ascites.[5]

Principles of management are same as that of preeclampsia and eclampsia. Antiseizure prophylaxis with magnesium sulphate is started. Careful assessment of maternal and foetal status followed by delivery is done. Administration of corticosteroids improves perinatal (pulmonary maturity, necrotising enterocolitis) and maternal (thrombocyte count, urinary output) outcome. Caesarean section is the common mode of delivery. Epidural anaesthesia can be used safely if the platelet count is >1,00,000/mm^3). Platelet transfusion should be given if the count is <50,000/mm.[3] Patient should be managed in an ICU until there is improvement in platelet count, urine output, BP and liver enzymes. Recurrence risk of HELLP syndrome is 3-19%.

Expectant management has been carried out selectively when pregnancy is <34 weeks with bed rest, plasma volume expansion (infusion of 5-2500 albumin), corticosteroids for a period of 24 hrs. In HELLP syndrome, perinatal mortality ranges between 5 and 60% and maternal mortality maybe up to 2500/lakh.

Maternal complications include- Abruptio placenta, DIC, acute renal failure, severe ascites, pulmonary oedema, pleural effusions, cerebral oedema, laryngeal oedema, retinal detachment, subcapsular liver haematoma, ARDS, sepsis and death. Perinatal complications- Morbidity and mortality are significantly increased. This is due to prematurity, RDS and sepsis. The disease has to be diagnosed as early as possible and delay in diagnosis is associated with high perinatal mortality.[6] A sincere effort has been put to study the HELLP syndrome incidence, its clinical course and to understand its outcome.

AIMS AND OBJECTIVES

To study the clinical course of HELLP syndrome and its outcome.

MATERIALS AND METHODS

This study was done in the Department of Obstetrics and Gynaecology, King George Hospital, Andhra Medical College, Visakhapatnam.

This study was done from February 2014 to August 2015.

Forty patients were selected whose BP was recorded more than 140/80 mmHg after twenty weeks of gestation.

Peripheral smear to check for haemolysis and elevated indirect bilirubin levels, elevated LDH levels, elevated liver enzymes, decreased platelet count <1,00,000/cumm were taken.

Incidence of HELLP syndrome in study group, its clinical features and maternal and foetal complications were recorded.

Prompt treatment was given and the outcome of the disease was noted.

All the statistical analysis was done using the latest SPSS software 2015 (California).

Inclusion Criteria

All pregnant women above 20 weeks of gestational age with BP more than 140/90 were selected.

Exclusion Criteria

1. Any patients who were on drugs, which were known to cause haemolysis.
2. Known previous hepatic diseases.
3. Known case of congenital haemolytic anaemias.
4. Known case of primary or secondary platelet disorders.
5. Cases of acute fatty liver of pregnancy.
6. Cases of intrahepatic cholestasis of pregnancy.

RESULTS

	Mean	Std. Deviation
Age	26.72	5.62

Table 1. Mean Age of the Study Participants (n=40)

Parity		p value
Primi	Multi	
16	24	0.621
Family History of Pre-Eclampsia		p value
1	6	0.028

Table 2. Association of HELLP/Partial HELLP Syndrome with Parity and Family History (n=40)

Diagnostic Criteria (ALL 3) (HELLP)		p value
Present	Absent	
2	38	0.004
HELLP and Partial HELLP		p value
Present	Absent	
4	36	0.003

Table 3. Association of HELLP with Pre-Eclampsia and All Three Diagnostic Features (n=40)

Hb%	6.43 gm%
Reticulocyte count (%)	89,600 cells/cc^3
Platelet count (cmm)	1.48 lakhs/cc^3

Table 4. Mean Haematocrit Findings in the HELLP Syndrome

Haemolysis in Peripheral Blood Smear (no)	6
Total bilirubin (mg/dL)	3.42 (mg/dL)
AST (u/L)	152.59 (u/L)
ALT (u/L)	141.94 (u/L)
LDH (u/L)	1022.85 (u/L)

Table 5. Mean Biochemical Values

Systolic BP	202.62 mmHg
Diastolic BP	118.17 mmHg

Table 6. Mean BP Findings in the HELLP Syndrome

IUGR	4
IUD	1
Preterm delivery	4
ARDS	1
Other complications	Nil

Table 7. Foetal Complications

DIC	1
Hepatic failure	2
Abruptio placentae	3
Sepsis	1
Stroke	1

Table 8. Maternal Complications

DISCUSSION

The mean age of the study group was found to be 26.72 years with a standard deviation of 5.62 years. According to a study conducted by Ashwini Mallesara et al, the mean age of the population was 21.34 with a standard deviation of 3.74 years. There is a slight difference of the age.

The association with HELLP/partial HELLP was not found to be significantly associated with the parity and the family history. There was a strong association of HELLP/partial HELLP with preeclampsia and all the three tests that were considered to be the gold standard tests to identify the pathology.

According to a study conducted by Ashwini Mallesara et al, the association with HELLP/partial HELLP was not found to be significantly associated with the parity and the family history. There was a strong association of HELLP/partial HELLP with preeclampsia. So, the study is in agreement with the other study conducted by Ashwini Mallesara et al and the three standard tests were platelet low count, haemolysis and elevated liver enzymes. Three fold elevations were observed in liver enzymes and the platelet count was half of the normal value. Significant haemolysis was observed. It was found that even after prompt treatment the maternal and the foetal complications were significantly higher in number.

Our study is in agreement with that of the other study in discussion.

In our study, the mean haemoglobin level was found to be 6.41 gm%, which is very low compared to the values that was got by the study conducted by Ashwini Mallesara et al. This may be due to the fact that the other study managed to get 320 patients, whereas in our study, only 40 patients were considered.

The mean platelet count and reticulocyte count in our study was found to be 1.48 lakhs/cc^3 and 89,600/cc^3, respectively. Again, the values that we got were very less when compared to that of the other study.

Six patients were confirmed to have haemolysis in our study. The other biochemical values that we got in our study are as follows, mean bilirubin was found to be 3.42 mg/dL, mean AST was found to be 152.59 micrograms per litre, mean ALT was found to be 149.94 micrograms per litre and mean LDH levels were found to be 1022 micrograms per litre.

The values were more or less similar when we compared to the study conducted by Ashwini Mallesara et al. So, our study is in agreement with that of the other study.

The mean systolic and diastolic BP recorded were high in our study when compared to the other.

The foetal complications that we recorded were intrauterine growth retardation, intrauterine death, preterm delivery and acute respiratory distress syndrome. The other study did not find acute respiratory distress syndrome even though they have reported preterm delivery pointing towards the fact that the steroids have been infiltrated to the mother well in advance so as to make the lungs of the foetus mature.

The maternal complications reported by us are DIC, hepatic failure, abruptio placenta, sepsis and stroke.

The HELLP syndrome is associated with well-known fact that it always has an increased risk for maternal death (1%) and increased rates of maternal morbidities such as pulmonary oedema (8%), acute renal failure (3%), DIC (15%), abruptio placentae (9%), liver haemorrhage or failure (1%), Acute Respiratory Distress Syndrome (ARDS), sepsis and stroke (<1%). Pregnancies complicated by HELLP syndrome are also associated with increased rates of wound haematomas and the need for transfusion of blood and blood products.

CONCLUSION

This study shows the incidence of HELLP is around 15% in hypertensive mothers. Even though, the pregnancy is thought to be a physiological process, HELLP is associated with high maternal and perinatal mortality. Early diagnosis and prompt management of hypertensive mothers helps in the reduction of incidence of HELLP syndrome and reduces both maternal and foetal complications.

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