

Maternal and foetal outcome in HELLP syndrome at tertiary care hospital

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Abstract

Objective: To determine maternal and foetal outcome in patients of Haemolysis, Elevated Liver enzyme and Low Platelet Count syndrome.

Methods: The descriptive case series was conducted at the Gynae Unit II of Civil Hospital, Karachi, over a period of 12 months in two episodes; first from December 28, 2006, to February 28, 2007, and then from September 1, 2007, to June 30, 2008. It comprised 40 consecutive women with pre-eclampsia and eclampsia along with altered platelet count who met the syndrome criteria. A pre-designed proforma was administered for data collection. Maternal and foetal outcomes were noted. SPSS 10 was used for statistical analysis.

Result: Among the 40 mothers, cesarean section was the most common outcome (n=24; 60%). Pulmonary oedema was found in 2 (5%) cases, acute renal failure in 10 (25%), disseminated intravascular coagulation in 6 (15%), and abruptio placenta in 5 (12.5%). Intrauterine growth restriction as a foetal outcome was observed in 18 (45%) cases. Pre-term birth was the result in 20 (50%) cases, and perinatal mortality was high (n=23; 57.5%).

Conclusion: Management and delivery of HELLP syndrome patients should be performed at tertiary care centres, where highly trained obstetrician, neonatal intensive care unit personnel and Multi-disciplinary facilities are available. Correct diagnosis and timely intervention can decrease the risk of maternal and perinatal mortality.

Keywords: Pre-eclampsia, Eclampsia, HELLP syndrome, Maternal outcome, Foetal outcome. (JPMA 63: 1500; 2013)

Introduction

The Haemolysis, Elevated Liver enzymes and Low Platelets count (HELLP) syndrome is a severe life-threatening manifestation of pre-eclampsia.¹

Pre-eclampsia is diagnosed when there is significant proteinuria in the presence of gestational hypertension. Weinstein considered HELLP syndrome as a variant of pre-eclampsia.² It develops in 10%-20% cases of severe pre-eclampsia.³

It is multi-system disease attributed to abnormal vascular tone, vasospasm, coagulation defect and vascular endothelial damage. There is production of endogenous anti-oxidants, and when they are in overwhelming numbers, a condition of oxidative stress develops. Pre-eclampsia develops due to poor trophoblastic invasion in myometrium, and maternal spiral arteries retain their muscular walls. Impaired intervillous blood flow results in inadequate perfusion and ischaemia in the second half of pregnancy.

The diagnosis of HELLP syndrome is based upon laboratory evidence of microangiopathic haemolytic anaemia, hepatic dysfunction and thrombocytopenia in a patient suspected to have pre-eclampsia.⁴

HELLP syndrome may develop antepartum or postpartum. A study conducted on a series of 442 patients revealed that 70% developed syndrome in antepartum period, and 30% postpartum.⁴

Maternal and foetal complications of HELLP syndrome are significant. The maternal mortality rate is 2% and perinatal mortality is 33%.³ Sibai BM et al reported maternal mortality rate as high as 24%.⁵

Samules et al reported 2% risk of hepatic rupture and 4-38% incidence of disseminated intravascular coagulation (DIC).⁶ HELLP syndrome frequently leads to acute renal failure in pregnancy, reported as 36% to 50%.^{7,8} According to Isler et al, the most common cause of maternal death was cerebral haemorrhage.⁹

Eltink et al reported stillbirth rate of 10%, while neonatal mortality and morbidity was related to gestational age at delivery, and not to the presence or absence of HELLP syndrome.¹⁰

The greatest challenges in caring for women with this disease are early diagnosis, instituting timely interventions and avoidance of associated complications.

It is a common problem in under-developed countries. The aim of the study was to determine the risk factors, maternal and foetal outcomes in pregnant women with HELLP syndrome at a tertiary care hospital of Karachi. The rationale of study was that early detection of high-risk

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individuals by well-trained primary medical personnel and timely referral to advanced tertiary centres are helpful in improving perinatal and maternal outcomes.

Subjects and Methods

The descriptive case series was conducted at the Gynae Unit II of Civil Hospital, Karachi, over a period of 12 months; from December 28, 2006 to February 28, 2007, and from September 1, 2007 to June 30, 2008.

All primigravidas and multigravidas who came with pre-eclampsia and eclampsia along with altered platelet count meeting the criteria of HELLP syndrome were included. After informed consent was obtained, detailed history was taken and a thorough examination was done. Samples for complete blood picture (CP), especially platelet count, urine detailed report (DR), serum urea, serum creatinine, serum electrolytes, serum prothrombin time (PT), serum activated partial thromboplastin time (APTT), serum fibrinogen degradation product (FDP), liver function test (LFT) and serum lactate dehydrogenase (LDH) were sent to the laboratory. Ultrasound was done for foetal well-being, especially for oligohydromnios and intrauterine growth restriction (IUGR). Maternal outcome in terms of caesarean section, vaginal delivery, acute renal failure, pulmonary oedema, abruptio placenta, DIC, postpartum haemorrhage (PPH), need for hysterectomy, intensive care unit (ICU) stay, need for blood and fresh frozen plasma (FFP) transfusion were noted. Foetal outcome in terms of IUGR, oligohydramnios, low birthweight (LBW), low APGAR score at 1 and 5 minutes and perinatal mortality were also noted. Patients were followed at 1st, 3rd and 7th day of delivery and blood CP, serum urea, serum creatinine, serum PT were repeated. All relevant informations were filled on a proforma. Statistical analysis was performed by using SPSS version 10. Descriptive statistics, frequency and percentages were computed for categorical variables like social status, parity, clinical presentation, mode of delivery, maternal and foetal outcome, APGAR score at 1 and 5 minutes and neonatal mortality. Mean and standard deviation were computed for continuous variables, like age and parity.

Result

The mean age of the 40 women in the study was 28.23 ± 5.9 years (Table-1). The mean parity was 3.0 ± 2.1 . Overall, 26(65%) belonged to the poor class, while 14(35%) were of middle class families. As for parity, 29(72%) were multiparous (1-5parity); 8 (20%) were nullipara (parity 0); and 3(8%) were grand multiparous (parity >5).

History of pregnancy-induced hypertension was observed in 20 (52.5%) women. Hypertension was found in 31 (77.5%) patients. Mild anaemia (haemoglobin [Hb]

Table-1: Descriptive statistics of age (n=40).

Statistics	Age (Years)	Parity
Mean \pm SD	28.23 \pm 5.9	3 \pm 2.1
95% Confidence interval	26.3 to 30.1	2.02 \pm 4.3
Median (IQR)	26(7)	3(4)
Minimum age	16	0
Maximum age	45	7

IQR: Inter-quartile range. SD: Standard Deviation.

Table-2: Maternal outcome (n=40).

Maternal Outcome	Frequency	Percentage
Caesarean Delivery	24	60%
Pulmonary Oedema	2	5%
Acute Renal Failure (ARF)	10	25%
Disseminated Intravascular Coagulation (DIC)	06	15%
Abruptio Placenta	05	12.5%
Postpartum haemorrhage	16	40%
Blood transfusion	23	57.5%
Hysterectomy	02	05%
ICU stay	15	37.5%
Maternal mortality	00	00

ICU: Intensive Care Unit.

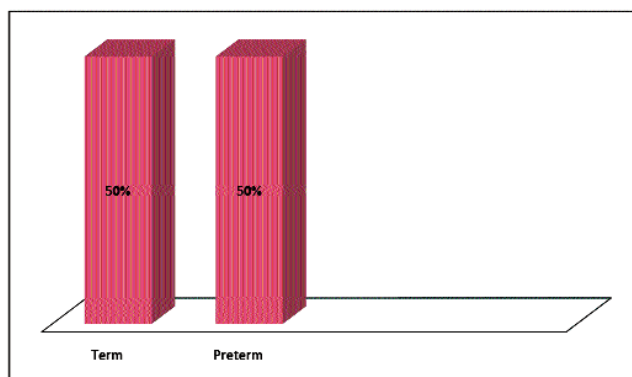


Figure: Foetal outcome in terms of gestational age at delivery (n=40).

<7g/dl) was found in 20 (50%) patients, moderate anaemia (Hb: 7-9.5g/dl) in 12 (30%), and severe anaemia (Hb: 9.6-10.5g/dl) in 8(20%). Pedal oedema was noted in 31(77.5%), and jaundice was reported in 2 (5%) patients.

Regarding maternal outcome, caesarean section was the most common outcome in 24(60%) women (Table-2). Out of the 16 (40%) vaginal deliveries, 14 (87.5%) delivered spontaneously, while 2 (12.5%) were induced. There was no instrumental delivery. Pulmonary oedema was observed in 2 (5%) women, acute renal failure in 10(25%), DIC in 6(15%), and abruptio placenta in 5(12.5%). Overall,

16 (40%) patients went into PPH due to uterine atony, abruptio placenta and DIC. Besides, 23 (57.5%) patients required transfusion of whole blood and packed cell volume according to the need, minimum one pint to maximum 8 pint; 16 (40%) women required FFP transfusion, 2 (5%) had transfusion of platelets as well, 2 (5%) ended up in obstetrical hysterectomy, and 15(37.5%) patients had to be admitted to ICU for close monitoring and management. No maternal mortality was recorded.

In terms of foetal outcome, IUGR was noted in 18(45%) foetuses and oligohydromnios was observed in 17(43%). Regarding gestational age at delivery, 20(50%) were term and 20(50%) were of pre-term gestation (Figure). At birth, 26 (65%) babies were alive while there were 14 (35%) intrauterine deaths and 9 (22.5%) neonatal deaths. As such, 17(42.5%) remained alive, while perinatal mortality was 23 (57.5%).

Out of the 26 babies who had scores of 20 (76.9%) were poor (<7) and 5(19%) were good (>7) at 1 minute. At 5 minutes, poor APGAR scores were observed in 11(42.3%), while good score was observed in 15(57.6%). Regarding birth weight, 24 (60%) babies were less than 2kg, while 16(40%) were greater than 2kg.

Discussion

HELLP syndrome is a life-threatening complication,¹ associated with substantial maternal and foetal morbidity and mortality. Various studies found the high incidence of HELLP syndrome in multiparous women. Ahmed et al found HELLP syndrome in 62.5% in multigravida and 37.5% primigravidas. In the current study, HELLP syndrome was found in 72% of multigravidas compared to 20% primipara.¹¹

In our study, Caesarean delivery was performed in 60% of women. This is not consistent with a study conducted in Turkish hospital that showed Caesarean in 75%. Unlike the above finding, it has been reported elsewhere that the incidence of caesarean section did not increase with the severity of HELLP syndrome.¹² Another study found that 85% of women delivered by caesarean section.¹³

Patient with HELLP syndrome are at increased DIC risk. In the present study, it was found in 15% of cases. Isler CM reported high incidence of DIC around 39%.⁹ Study conducted in Lahore found DIC in 62.5% and abruptio placenta in 25%.¹¹

Abruptio placenta is a recognised complication of HELLP syndrome and in the current study it accounted for 12.5% of cases which is comparable to 11% found in the study conducted at the Turkish hospital.¹²

HELLP syndrome frequently leads to acute renal failure (ARF) in pregnancy, reported as 36% to 50% of obstetrics ARF.^{8,14} Sabi et al studied 442 cases of HELLP syndrome and reported ARF in 7.7% cases.⁴ In the present study, ARF accounted for 25%, implicating delay in diagnosis, admission or intervention. Other studies have also shown that HELLP syndrome is associated with abruptio placenta, ARF, DIC and pulmonary oedema.^{8,15}

A study comprising 156 patients reported DIC in 62.5%, abruptio placenta in 25%, ARF in 18.75%, PPH in 12.5% of women.¹¹ Our study found DIC in 15% women, abruptio placenta in 12.5%, and PPH in 40%.

In our study perinatal mortality was 57.5%. Major contributory factors to high perinatal mortality were low birthweight and high number of pre-term deliveries. Zen et al reported perinatal mortality of 29% in patients with HELLP syndrome.¹⁶ Poor perinatal outcome was mainly related to abruptio placentae, intrauterine asphyxia and extreme prematurity.¹⁷

Another study showed that most of the mortalities were due to prematurity, respiratory distress syndrome (RDS) 54%, intracranial haemorrhage 6%, hypoxic ischaemic encephalopathy (HIE) 23% and pulmonary haemorrhage.¹⁸ Egerman reported 11% perinatal mortality.¹⁹

In our study, another reason for high perinatal mortality was probably the late arrival or the late diagnosis due to variable presentation of the disease, as well as increased intrauterine death at the time of presentation. A study reported perinatal mortality rate of 21.4%.²⁰

In the present study IUGR was observed in 45% cases. This observation was in accordance with the study of Kim HY et al.²¹

Our study showed that 50% babies were delivered at term and 50% were pre-term; 60% had weight less than 2kg and 40% were greater than 2kg. A study found cesarean section rate of 85%, and 65% babies were pre-term, with a mean gestational age around 34 weeks and mean birthweight around 2 kg.²¹

Most published evidence indicates low 5-minute APGAR score in the neonates born to mother with HELLP syndrome. In the present study, low APGAR score was found in 57.6% which is comparable with study of Kim HY et al.²¹

The high proportion of maternal and foetal complications reflect high-risk population at our perinatal centre, which serves as the main referral centre for many hospitals in the country.

Conclusion

The devastating effects of HELLP syndrome can be prevented by close antenatal followup, timely prediction of risk factors and reasonable management strategies. In spite of recent advances in public health and provision of primary healthcare units, much more effort and further skilled care are mandatory for satisfactory decline in adverse maternal and foetal outcome.

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