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A STUDY OF MATERNAL AND PERINATAL OUTCOME IN HELLP SYNDROME

Medicine

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ABSTRACT

BACKGROUND: A study of fetomaternal outcome in patients with severe pre- eclampsia and eclampsia with HELLP syndrome
Purpose: To determine the trend of occurrence of HELLP syndrome, risk factors, its complications and its effect on maternal and perinatal outcome of HELLP syndrome in pregnant women at Madurai Medical College Hospital, Madurai.
METHODS: Patients with severe hypertension in pregnancy who were admitted between Sep 2016 to Sep 2018 at Madurai Medical College Hospital, Madurai were taken up for the study. Out of 750 cases of severe preeclampsia/ eclampsia, there were 182 cases of HELLP syndrome. These were compared with case without HELLP syndrome for their mode of presentation along with maternal and perinatal morbidity and mortality.
RESULT: The overall incidence of HELLP syndrome was 24.2% in the antepartum factors; multi (55.8%), preeclampsia (90%), symptoms (81.4%), Haemolysis (86%), Preterm Delivery (84%) were statistically significant. Abnormal perinatal outcome was statistically significant.
Conclusion: Women with severe hypertension in pregnancy manifesting with HELLP syndrome show a significantly greater frequency of developing Complications like Abruption, ARF and DIC. Therefore, their care necessitates intensive monitoring to preclude development of these complications. Successful management requires recognition, a timely intervention and to render optimal patient treatment.

KEYWORDS

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 Pregnancy induced hypertension, Pre-eclampsia, Eclampsia and HELLP syndrome.

Pre-eclampasia occurs in 5-10% of pregnancies. The HELLP syndrome (haemolysis, elevated liver enzymes, and low platelets) in a variant of severe pre- eclampsia that is associated with significant maternal and perinatal morbidity and mortality. HELLP syndrome develops in 6-12% of women with preeclampsia or eclampsia accounting for 0.4-0.7% of all pregnancies.

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. HELLP syndrome is regarded as a higher risk for the mother and neonate compared to pre-eclampsia.

As our hospital provides treatment facilities to large number of Pre-eclampsia, eclampsia and a relatively higher number of patients of HELLP syndrome, we have the opportunity to conduct such studies which can help us to determine the trend of occurrence of HELLP syndrome, its complications and its effect on maternal and fetal outcome. This will help us in understanding better about the pathophysiology of the disease which can be applied to improve the management and thereby improve the maternal and perinatal outcome.

AIM OF THE STUDY

A study of fetomaternal outcome in a patients with severe pre-eclampsia and eclampsia with HELLP syndrome and to determine the trend of occurrence of HELLP syndrome, risk factors, its complications and its effect on maternal and perinatal outcome of HELLP syndrome in pregnant women at Madurai Medical College Hospital, Madurai.

MATERIALS AND METHODS

Analysis of 750 cases of severe preeclampsia / eclampsia with HELLP syndrome and without HELLP syndorme during the year 2016-2018 in Madurai Medical College Hospital, Madurai to determine the occurrence and course of HELLP Syndrome in order to make a timely intervention and to render optimal patient treatment, a better maternal and perinatal outcome. These patient will be followed up prospectively till delivery.

RESULTS:

These were 182 Cases of HELLP Syndrome among 750 cases of severe preeclampsia / Eclampsia over the period of 2 yrs.Majority of cases of HELLP Syndrome belongs to the age group 20-24 yrs (Table 1), The mean Hb level was 7.8 $\pm$ 2.5 which shows drop in HB in HELLP Syndrome cases (Table 2) The mean serum biluribin Total Direct and indirect of HELLP cases was 1.9 $\pm$1.5, 0.8$\pm$0.6 and 1.1$\pm$1.0 respectively The serum indirect biluribin was more among HELLP syndrome (Table 3).

Among 48.8% of the HELLP cases has more than 3+ Proteinuria (Table 4), 55.8% of Pregnancy in HELLP cases were multi gravida (Table 5).The mean gestational age of HELLP cases was 33.2$\pm$3.5 weeks and common around 33-34 weeks of gestation (Table 6), 16.3% cases had fundus change in HELLP cases (Table 7).

The mean SGOT, SGPT, LDH and Platelet of HELLP group were 111.6 $\pm$ 59.2, 122.6 $\pm$ 101.0, 1452.6 $\pm$ 1136.5 and 69113 $\pm$ 26919.7 respectively. There was significant elevation of liver enzymes in HELLP Syndrome (Table 8).About 56% cases of Platelets range between 50000 to 100000. (Table 9).90% cases Pre eclamsia (Table 10)

About 81.4% of HELLP group patient present with symptoms and 61.4% of Non-HELLP group patient present with symptoms (Table 11), Haemolysis (86%) (Table 12), Preterm Delivery 83.7% (Table 13), Mode of Delivery – LN (55.8%) Forceps (2.3%), LSCS (42%) (Table 14), 84.4% cases required blood and blood product transfusion (Table 15)

About 48.8% cases among the HELLP Group developed complication and 28% cases among the Non-HELLP group developed complication. So the Complication was strongly associated with HELLP syndrome (Table 16), 83.7% cases had normal maternal Outcome (Table 17), 27.3% cases had abnormal perinatal outcome (IUD) (Table 18), HELLP syndrome mothers had low birth weight (Mean BW- 1.9$\pm$0.7) (Table 19), 79.0% cases required Antihypertensives along with $MGSO_4$ Regimen (Table 20)

DEMOGRAPHIC CHARACTERISTICS

Table: 1. Percentage distribution of study subjects according to their age:

Age Group	HELLP Syndrome	
	Nos.	%
15-19	13	7
20-24	18	44
25-29	51	27.9
30-34	38	20.9
Total	182	100

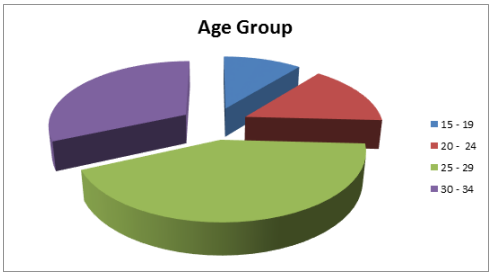


Table: 2. Comparison of biochemical variables between HELLP and non HELLP

Variable	HELLP, n=182		Non HELLP, n=568		Difference b/w means	't'	df	`Significance
	Mean	SD	Mean	SD				
HB	7.8	2.5	10.8	8.4	3.0	2.223	98	P<0.05

Table : 3. Comparison of biochemical variables between HELLP and non HELLP

Variable	HELLP, n=43		Non HELLP, n=57		Difference b/w means	't'	df	`Significance
	Mean	SD	Mean	SD				
S B-T	1.9	1.5	0.8	2.3	1.1	5.156	98	P<0.001
S B-D	0.8	0.6	0.5	0.2	0.3	3.648	98	P<0.001
S B-I	1.1	1.0	0.3	0.1	0.8	5.475	98	P<0.001

Table: 4. Association between HELLP syndrome and Urine Albumin:

URINE ALBUMIN	HELLP	
	No	%
+	9	4.7
++	55	30.2
+++	89	48.8
++++	29	16.3
Total	182	100

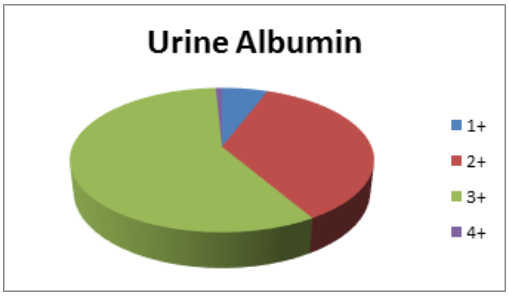


Table: 5. Association between HELLP syndrome and gravida:

Gravida	HELLP	
	No	%
Primi	80	44.2
Multi	102	55.8
Total	182	100.0

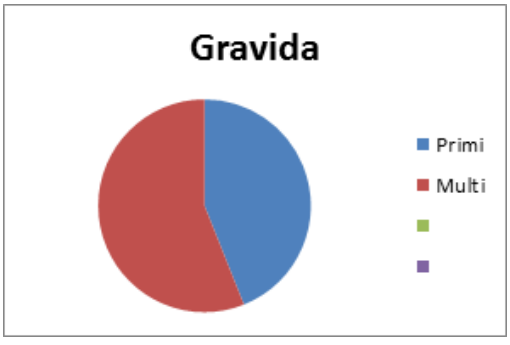


Table: 6. Comparison of Gestational age of HELLP with non HELLP.

HELLP		Non-HELLP		Difference	't'	df	Significance
Mean	SD	Mean	SD	b/w means			
33.2	3.5	34.8	3.1	1.6	2.424	98	P>0.05

Table: 7. Comparison of Fundus between HELLP and Non HELLP:

Fundus	HELLP		Non- HELLP		Total	
	No	%	No	%	No	%
Grade-I	22	11.6	75	13	97	13.0
Grade-II	9	4.7	21	3.7	30	4.0
Normal	151	83.7	472	83	623	83.0
Total	182	100.0	568	100.0	750	100.0

Table: 8. Comparison of SGOT, SGPT, LDH, Platelet between HELLP and non HELLP:

Variable	HELLP, n=182		Non HELLP, n=568		Difference b/w means	't'	d f	Significance
SGOT	Mean	SD	Mean	SD				
	111.6	59.2	35.9	24.0	75.7	8.717	98	P<0.001
SGPT	122.6	101.0	35.2	25.4	87.4	6.282	98	P<0.001
LDH	1452.6	1136.5	246.9	171.9	1205.7	7.902	98	P<0.001
Platelet	69113.5	26919.7	1943.5	6099.9	125202.3	12.557	98	P<0.001

Table: 9. Platelet

Platelet	HELLP syndrome	
	No. of Cases	Percentage
Class-I < 50000	55	30.2%
Class-II 50000 – 1 lakh	102	55.8%
Class-III 1 lakh - 1.5 lakh	25	14%

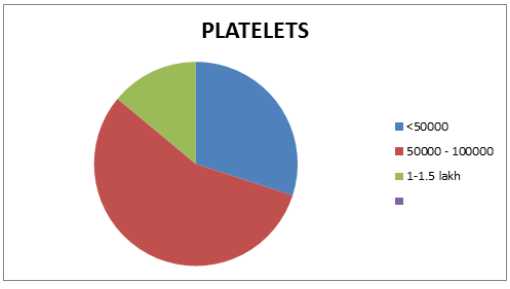


Table: 10.Association of Pre-Eclampsia or Eclampsia associated with HELLP mothers:

TYPE	HELLP	
	No	%
Pre Eclampsia	166	90.7
Eclampsia	16	9.3
Total	182	100.0

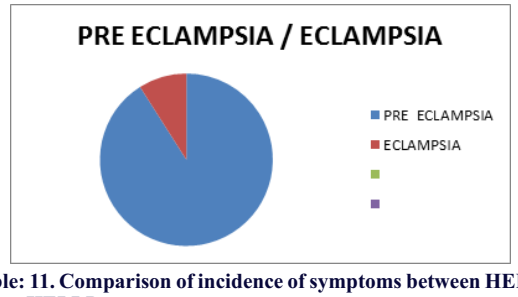


Table: 11. Comparison of incidence of symptoms between HELLP & non HELLP:

TYPE	HELLP		Non- HELLP		Total	
Symptoms	No	%	No	%	No	%
	147	81.4	378	66.5	525	70.0
No symptoms	35	18.6	190	33.4	225	30.0
Total	182	100.0	568	100.0	750	100.0

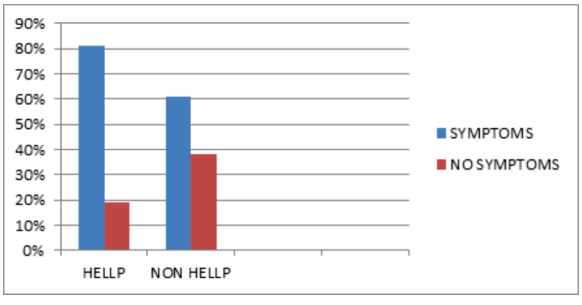


Table: 12. Peripheral Smear associated with HELLP:

Peripheral Smear	HELLP	
	No	%
Burrcell	48	26.6
Fragment	38	20.9
NHBP	25	14.0
Schistoc	71	39.5
Total	182	100.0

MATERNAL OUTCOME

The maternal outcome of HELLP group was studied in respect of their Term of delivery, mode of delivery, blood transfusion, complications and condition of mothers.

Table: 13. Association between preterm / term delivery with HELLP.

Term	HELLP	
	No	%
Preterm	153	83.7
Term	29	16.3
Total	182	100.0

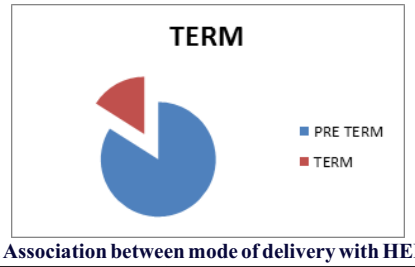


Table: 14. Association between mode of delivery with HELLP.

Mode of delivery	HELLP	
	No	%
Labour Natural	102	55.8
Forceps	4	2.3
LSCS	76	41.9
Total	182	100.0

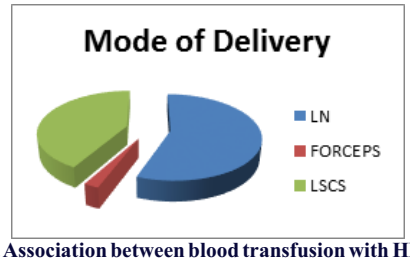


Table: 15. Association between blood transfusion with HELLP.

Blood transfusion	HELLP	
Nil	No	%
	22	11.6
PCT	51	27.9
PCT/pdt	109	60.5
Total	182	100.

Table:16. Association between complications with HELLP.

	HELLP		Non-HELLP		Total				
Complication							**χ2**	**d f**	**Significance**
Nil	No	%	No	%	No	%			
	93	51.2	409	72	502	67.0			
Yes	89	48.8	159	28	248	33.0	8.55	1	P>0.01
Total	182	100.0	568	100.0	750	100.0			

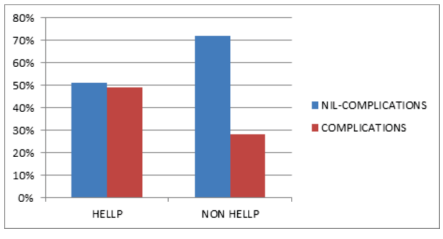


Table:17. The condition of patient associated with HELLP syndrome:

Condition	HELLP	
	No	%
Expired	22	11.6
Normal Maternal Outcome	151	27.9
Recovered after Hemodialysis	8	60.5
Total	182	100.

Perinatal outcome:

Table: 18.Comparison of Perinatal outcome between HELLP and non HELLP

Foetus condition	HELLP		Non-HELLP		Total				
							χ2	**df**	**Significance**
IUD	No	%	No	%	No	%			
	49	27.3	71	12.5	120	15.8			
Alive	133	72.7	497	87.5	630	84.2	7.642	1	P<0.01
Total	182	100.0	568	100.0	750	100.0			

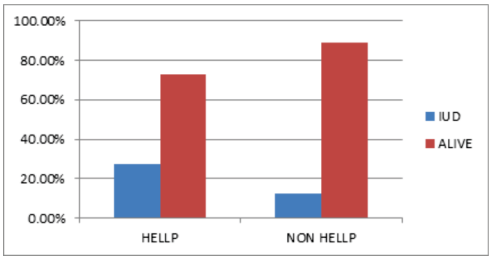
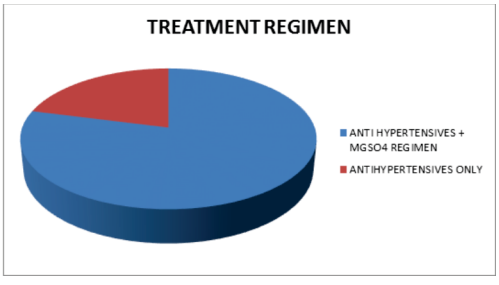


Table:19. Comparison of birth weight of babies between HELLP and non HELLP:

Variable	HELLP, n=44		Non HELLP, n=57		Difference b/w	't'	df	Significance
birth weight	Mean	SD	Mean	SD	means			
	1.9	0.7	2.2	0.6	0.3	2.064	99	P<0.05

Table:20 Treatment Regimen

		ANTI HYPERTENSIVES + MGSO4 REGIMEN	ANTIHYPERTENSIVES ONLY
No. of cases	144	38	
Percentage	79.0%	20.9%	



DISCUSSION

A study of 182 cases of HELLP syndrome and non-HELLP syndrome was undertaken during the year 2016 to 2018 for a period of two years and the results were compared between the economic, demographic, physiological,biochemical, and obstetric character.

The wide range of incidence (17.5%)can be attributed to the remarkable variability of the diagnostic criteria of the syndrome. In addition, these incidence rates cannot be considered for general population since they are reported from tertiary referral centres.

The average age group is 25.2 years.It is more common in multigravida (55.8%).

All cases belong to low socioeconomic status probably because our institution caters of mainly to economically deprived strata of society.The average, gestational age at presentation is 33.8 weeks,

70% of HELLP Syndrome patients manifest before labour, while 30% manifest after delivery.

The frequent symptom is epigastric pain and /or right upper quadrant pain (90%) accompanied by nausea and vomiting. Headache may be present in 50% cases. In our study 40% cases had Headache associated with nausea andvomiting, rest of the patients (60%) with Oliguria, Nausea, Vomiting and convulsion.According to our study, 90.7% HELLP syndrome was associated with severe preeclampsia and 9.3% belonged to eclampsia.

Urine analysis showed proteinuria of more than 2+ in 95.3% cases of HELLP Syndrome. It should be emphasized that 15% of HELLP Syndrome patients present with neither hypertension nor significant proteinuria (B.E.Reubinoff et al) In our study 4.7% patients had 1+ proteinuria.According to Sibai, some women with HELLP Syndrome however hypertension and proteinuria may be absent or slight. Thus it is imperative that all health care providers become knowledgeable about clinical signs &symptoms that might herald the onset of HELLP Syndrome.

Platelets levels in HELLP Syndrome
Class I Class II Class III
Martin 1990 1.09% 28% 71%
our study 30.2% 55.8% 14%

The definition of abnormal level varies among different studies.

Severity of HELLP Syndrome is reflected in its laboratory parameters and not in the usual clinical parameters like blood pressure and proteinuria.Although microangiopathic hemolytic anemia underlies HELLP Syndrome, paradoxically most patients are not anemic when first admitted to the hospital. In our study all HELLP cases had hemolytic blood picture with mean

haemoglobin level of 7.8 gms ± 2.5g%.

According to B.E. Reubinoff et al., type of enzymes and definition of abnormal level also varies among different studies. There is direct correlation between the degree of thrombocytopenia and measures of liver dysfunction.An inverse correlation between platelets and LDH concentration was seen in both classes of HELLP Syndrome. Serum concentration of SGOT generally paralleled lactate dehydrogenase during the course of HELLP Syndrome. In our study there is inverse correlation between platelets and LDH in HELLP Syndrome.

79% cases were started on MgSO4 regimen in addition to antihypertensive, while 20.9% cases were in antihypertensive only. According to Sibai (1999), caesarean delivery rate is high with HELLP Syndrome especially when pregnancy is less than 34 weeks of gestation (76%).According to our study, 55.8% cases of HELLP Syndrome delivered by Labour natural, 41.9% by LSCS 2.3% by Forceps.

Maternal Outcome

Though coagulapathy has been mentioned as the most common complication of HELLP Syndrome, in my study all parameters like bleeding time (B.T), Clotting time (C.T), serum fibrinogen were normal. This may be due to non-sensitive parameters to detect DIC. More sensitive parameters like antithrombin IV, factor VIII and D-dimer may be needed to detect DIC.

According to sibai (1999) incidence of maternal mortality is as high as 24%. In my study, there were22 cases of maternal death giving rise to maternal mortality rate of 11.6%.

Perinatal outcome

According to Sibai perinatal mortality is 30-40% primarily because of prematurity. There is a significant trend for advanced form of HELLP Syndrome (Class I & Class II) to appear at earlier gestational age. According to our study perinatal mortality is primarily of prematurity. The birth weight of live born babies of HELLP syndrome mothers significantly lesser than the non-HELLP syndrome babies. Mean birth weight of babies of HELLP mothers was 1.9 ± 0.7 kg.

Post-partum period

Lowest platelet count did not predict peak values of aspartate aminotransferase or lactate dehydrogenase. The degree of abnormality of platelet counts, AST and LDH did not perspectively and accurately predict time of recovery. In our study all cases for platelet count and liver enzymes reverted to normal levels by 4th – 7th postpartum day.

1. The Hb level was significantly lesser among the HELLP syndrome mothers than their counter part non HELLP mothers.
2. The SB-T, D, and I were significantly more among the HELLP syndrome mothers than the non HELLP mothers.
3. Significant proteinuria is present in HELLP syndrome
4. The incidence of HELLP syndrome is significantly more among Multigravida.
5. Gestational age of HELLP syndrome was significantly lesser than the non HELLP.
6. The SGOT, SGPT and LDH were significantly greater in HELLP group than the non HELLP group and Platelet count was significantly lesser in HELLP group than the non HELLP group.
7. HELLP syndrome more commonly occurs in preeclamptic patient
8. Mode of delivery was not significantly altered between both groups.
9. The blood transfusion was significantly essential to HELLP syndrome subjects.
10. The complications (48.8%) were significantly more among the HELLP group than the others.
11. The mortality incidence (11.6%) was significantly more among HELLP group.
12. The birth weight of live born babies of HELLP syndrome is 1.9 was significantly lesser than the other babies' birth weight.
13. 27.3% of IUD and 54.5% of abnormal prenatal outcome was strongly associated with HELLP syndrome.

CONCLUSION

The question of whether HELLP Syndrome exists as a distrint entity or not is a part of a spectrum of pregnancy complications, which have common liver dysfunction, haemolysis and thrombocytopenia has long been a source of speculation among obstetricians and physicians. However, the importance of this collection of signs and symptoms lies not in its name but rather in its associated high maternal and perinatal morbidity and mortality. Hence,

1. Patient with HELLP Syndrome warrants an emergency obstetric help.
2. HELLP Syndrome demands, careful and close evaluation of maternal and neonatal parameters and should be given equal attention in decision making.
3. Prompt delivery is mandatory regardless of gestational age.
4. Successful management requires recognition, a timely intervention and to render optimal patient treatment.

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