

Hellp Syndrome - Associated with Moderate to Severe Pre-Eclampsia / Eclampsia

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OBJECTIVE – To find out the incidence of HELLP syndrome in hypertensive pregnancy and the resultant perinatal outcome. **METHOD** – A detailed study was done for signs, symptoms and laboratory parameters in women with moderate – severe pre-eclampsia – eclampsia and those with HELLP syndrome. The latter were classified into class I, II and III according to severity of disease with the values in women with normal pregnancy acting as controls. **RESULTS** – Out of 1084 pregnant women 75 (6.92%) developed hypertensive disorders of pregnancy (HDP). Out of these 75 – 3 (4%) had HELLP syndrome and 37 (49.33%) had partial HELLP syndrome. Of the partial HELLP syndrome, 67.5% had only elevated liver enzymes (EL), 24.3% had only low platelet count (LP) and 8.2% had both EL and LP without any evidence of hemolysis. Complete resolution of laboratory parameters occurred on fourth post-partum day. The perinatal mortality was 66.7% in HELLP syndrome, 32.43% in partial HELLP syndrome and 21.33% in HDP. **CONCLUSION** – Early detection and treatment of HDP and its complications is needed to reduce maternal and perinatal morbidity and mortality.

Key words – hypertensive disorders of pregnancy, elevated liver enzymes, low platelets, HELLP syndrome

Introduction

Pre-eclampsia and eclampsia are the leading causes of maternal and perinatal morbidity and mortality. The incidence of complications depends on time of onset, degree of maternal target organ damage and presence of medical problems. Weinstein coined the term HELLP syndrome to a special group of gravidas with evidence of hemolysis, elevated liver enzymes and low platelet count.

The aim of the present study was – to study the percentage of women with moderate – severe pre-eclampsia – eclampsia who also fulfilled the criteria of HELLP syndrome and study their symptoms signs and laboratory parameters.

Material and Methods

We studied 1084 antenatal women over one year. Of these, 75 who had hypertensive disorder of pregnancy (HDP) were grouped into Group I which was further subdivided into :-

- Subgroup A: Moderate pre-eclampsia
BP 140-160/100-110 mmHg
- Subgroup B: Severe pre-eclampsia BP >160/110 mmHg
- Subgroup C: Eclampsia

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Group II : consisted of 25 women with normal pregnancy were taken as controls. In addition to routine investigations, special investigations like blood urea, serum creatinine, liver function tests, platelet count, PBF were done. Glasgow model was followed for treatment.

Results

Incidence of HDP as 6.92% (75/1084). Of 75 women with HDP, 20 (26.6%) had moderate PFT (Subgroup IA), 29 (38.67%) had severe PFT (Subgroup IB) and 26 (34.6%) had eclampsia (Subgroup IC). Distribution of women according to age and parity is shown in Table I and II. Majority (87%) of women belonged to low socio-economic status.

Three women (4%) of group I, one each in subgroup IA, IB and IC, were diagnosed to have HELLP syndrome. Thirty seven (49.3%) women of group I developed partial HELLP syndrome, showing that a considerable number of hypertensive patients had either elevation of liver enzymes (EL) or lowering of platelets (LP) or both but no evidence of hemolysis (Table III).

Mean gestational age in patients with HELLP syndrome was 35 weeks ± 4.36 with partial HELLP syndrome it was 36.06 weeks ± 3.50 weeks. In Group I mean gestational age was 35.96 weeks ± 4.62.

Proteinuria – was present in all the patients of HELLP and partial HELLP syndrome. Twentyeight (37.3%) women of group I had ++++ proteinuria. Headache, vomiting, visual disturbances and epigastric pain had

Table I : Distribution of Cases According to Age

Age (years)	Group I A Moderate PET	Group I B Severe PET	Group I C Eclampsia	Total	Group II Controls
15-19	1	7	6	14 (18.7%)	5 (20%)
20-24	12	13	8	33 (44%)	13 (52%)
25-29	4	6	8	18 (24%)	5 (20%)
30-35	3	2	4	9 (12%)	2 (8%)
> 35	-	1	-	1 (1.3%)	-

In group I, majority or 68% women were in 20-29 years. Only one women was of >35 years. Mean age was 24.2 years.

Table II : Distribution of Cases According to Parity

Parity	Group I				Group II Controls N=25
	Moderate PET Subgroup IA (N=20)	Severe PET Subgroup IB (N=29)	Eclampsia Subgroup IC (N=26)	Total (N=75)	
Primi	15	15	20	50 (66.7%)	17 (68%)
Multi	5	14	6	25 (33.3%)	8 (32%)
G2	3	11	3	17 (22.7%)	3 (12%)
G3	2	1	1	4 (5.3%)	2 (8%)
G4	-	1	1	2 (2.7%)	2 (8%)
G5 or more	-	1	1	2 (2.7%)	1 (4%)

In Group I, 66.7% women were primigravidaes while 33.3% were multigravidas

Table III : Distribution of Cases According to Clinical Severity

	Moderate PET Subgroup IA	Severe PET Subgroup IB	Eclampsia Subgroup IC
Group I (N=75)	20 (26.6%)	29 (38.6%)	26 (34.6%)
HELLP Syndrome (N=3)	1 (33.3%)	1 (33.3%)	1 (33.3%)
Partial HELLP Syndrome (N=37)			
Elevated liver enzymes (EL) (N=25) (67.5%)	2 (8%)	11 (44%)	12 (48%)
Low platelets (LP) (N=9) (24.3%)	2 (22.2%)	4 (44.4%)	3 (33.3%)
EL + LP (N=3) (8.2%)	1 (33.3%)	-	2 (66.7%)

a direct relationship with severity of toxemia.

Twentyfive normal pregnant women (Group II) between 17-40 years of age with parity upto five showed blood platelet count ranging between 2,10,000/cmm - 4,40,000/cmm with mean value 2,90,000/cmm and S.D. \pm 54.23. SGOT activity ranged from 2-12 IU/L with mean 5.80 IU/L and S.D. \pm 2.67. Serum bilirubin ranged from 0.2 - 0.8mg% with mean of 0.4 mg% and S.D. \pm 0.67. There was no evidence of hemolysis.

Laboratory parameters in group I, subgroup IA, IB, IC, HELLP and partial HELLP syndrome are shown in Table IV.

To delineate severity of disease, patients of HELLP syndrome were divided into three classes according to lowest antepartum platelet count. No woman was in

class I i.e. platelet count $<$ 50,000/cmm, one woman was in class II i.e. platelet count 50,000 - 100,000/cmm and two women were in class III i.e. platelet count 100,000 - 150,000/cmm.

Mode of delivery

In Group I, among primigravidas, 64% had vaginal delivery, 30% cesarean section and 6% forceps delivery. Among multigravidas 56% had vaginal delivery, 40% cesarean sections and 4% forceps delivery.

Among HELLP syndrome, one out of two primis (50%) and the only multigravida (100%) had vaginal delivery. The other primigravida had cesarean section because of fulminant toxemia with CPD.

Out of 28 primigravidas with partial HELLP syndrome, 18 (64.29%) had vaginal delivery, eight (28.5%) cesarean

Table IV : Laboratory Parameters in Group I

		Blood platelet count...x103 cmm(mg%)		Serum bilirubin		SGOT IU/L		SGPT IU/L	
		AP	PP4	AP	PP4	AP	PP4	AP	PP4
Subgroup I A	Range	97-310	215-350	0.8-2.6	0.4-0.8	6-48	11-22	6-80	5-28
	Mean	200.50	277.25	1.61	0.69	29.25	13.10	23.75	9.5
	S.D	\pm 49.4618	\pm 41.2781	\pm 0.7148	0.69	\pm 29.298	\pm 15.93	\pm 22.849	\pm 5.414
	S.E.	\pm 10.38		\pm 0.1208		\pm 0.4948		\pm 0.3499	
Subgroup I B	Range	100-320	210-350	0.6-4.8	0.6-0.9	9-93	9-28	7-97	7-28
	Mean	207	292.24	1.948	0.7345	44.966	14.621	44.310	10.931
	S.D.	\pm 61.40	\pm 46.167	\pm 1.168	\pm 2.269	\pm 30.537	\pm 4.55	\pm 31.272	\pm 5.592
	S.E.	\pm 15.736		\pm 0.255		\pm 5.71			\pm 5.8316
Subgroup I C	Range	100-270	220-350	0.6-3.6	0.4-1.2	9-115	9-28	7-111	5-30
	Mean	191.923	295.38	1.930	0.773	52.953	15.153	51.654	11.384
	S.D.	\pm 28.68	\pm 45.05	\pm 0.829	\pm 0.168	\pm 32.53	\pm 4.478	\pm 30.503	\pm 5.899
	S.E.	\pm 12.218	\pm 13.989	\pm 0.211	\pm 0.138	\pm 6.418	\pm 1.228	\pm 6.006	\pm 1.274
Partial HELLP Syndrome	Range	100-275	210-350	0.6-3.8	0.3-0.9	12-115	10-28	12-112	5-30
	Mean	189.05	289.86	2.229	0.756	59.00	15.892	59.459	11.729
	S.D.	\pm 47.841	\pm 36.836	\pm 0.884	\pm 0.138	\pm 28.663	\pm 4.993	\pm 27.487	\pm 6.090
	S.E.	\pm 13.39	\pm 12.422	\pm 0.1980	\pm 13.637	\pm 11.825	\pm 1.078	\pm 11.750	\pm 1.457
HELLP Syndrome	Range	98-125	215-325	1.5-4.8	0.6-0.8	66-130	13-15	80-88	10-28
	Mean	107866.67	263.333	2.966	0.733	106.00	14.333	84.667	16.00
	S.D.	\pm 33.49	\pm 46.255	\pm 1.680	\pm 0.115	\pm 34.871	\pm 10.154	\pm 4.163	\pm 10.392
	S.E.	\pm 22.173	\pm 28.82	\pm 0.979	\pm 0.150	\pm 2.626	\pm 1.6354	\pm 2.462	\pm 1.7884
		AP - Antepartum		PP4 - Post Partum Day 4					

section and two (7.14%) forceps delivery. Of the 9 multigravidas with partial HELLP syndrome 6 (66.7%) had normal delivery, 2 (22.2%) cesarean section and 1 (11.1%) forceps delivery. Table V shows perinatal

Table V : Perinatal Outcome

No. of still births	Group I	Subgroup IA	Subgroup IB	Subgroup IC	HELLP Syndrome	Partial Hellp Syndrome	Group II
Total	16	2	5	9	2	14	Nil
Fresh still births	8	2	2	4	1	6	Nil
Macerated still births	8	-	3	5	1	6	Nil

Highest number of still births were seen in eclamptic women.

primigravidas and 33.3% were multigravidas which is very close to the findings of Samal et al⁴ who gave 62.7% and 37.3% incidence respectively. In Group II, 68% were primigravidas and 32% were multigravidas. Among the women of partial HELLP syndrome 75.7% were primigravidas 24.3% multigravidas.

Mean age of patients in Group I was 24.2 years. Nagar et al⁵ reported it as 22.31 years. It was 21.33 years in our HELLP syndrome group. A marked preponderance of 86.7% women belonged to low socio-economic strata; 93% were unbooked. Only 4% women had past or family history of toxemia of pregnancy, comparable to 2.2% reported by Bhat and Barfiwala⁶.

Epidemiological studies of HDP report that hypertension complicates nearly 10% of all pregnancies⁷ as compared to 6.92% in our study. Our incidence of HELLP syndrome is 4%, comparable to Neiger et al's⁸ 4-16%.

The mean gestational age at the time of admission in Group I was 35.96 ± 4.62 weeks, in partial HELLP syndrome 36.06 ± 3.50 weeks and in HELLP syndrome 35.00 ± 4.36 weeks.

In Group I, 26.6% women had moderate pre-eclampsia, 38.6% severe pre-eclampsia, 34.6% eclampsia. Among partial HELLP syndrome 16.22% had moderate pre-eclampsia and 40.54% severe one, 43.24% had eclampsia. In HELLP syndrome, moderate PET, severe PET and eclampsia were seen in one woman each. The differences are statistically not significant.

Fundus was normal in 30% while 52% had Grade I or II changes and 18% had Grade III or IV changes. Aggarwal et al¹⁰ reported normal fundus in 41.96%, Grade I or II in 49.1% and Grade III or IV in 4.46%.

outcome.

Discussion

In the present study in Group I, 66.7% were

All women of HELLP syndrome had recovery of platelet count and liver enzymes by 4th post-partum day. Martin¹¹ reported 100% recovery in class II HELLP syndrome women by 6th post partum day as compared to 90% recovery in class I HELLP syndrome women.

61.34% babies in group I were growth retarded. Only surviving infant of HELLP syndrome was severely growth retarded and could be saved by emergency LSCS. The perinatal mortality in Group I was 21.33%, in HELLP syndrome 66.7% and in partial HELLP syndrome 32.43% (Table V). The difference in the perinatal mortality in HELLP and in partial syndrome was statistically highly significant (p<0.01).

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