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LDH: A PROGNOSTIC MARKER IN PRE-ECLAMPSIA- ECLAMPSIA: AN OBSERVATIONAL STUDY IN A NORTH EASTERN STATE OF INDIA MEGHALAYA

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ABSTRACT

Background: Pre-eclampsia is a major cause of maternal and perinatal mortality and morbidity worldwide causing 24% of all maternal deaths in India. LDH is a intracellular enzyme which is a marker of severity of pre eclampsia. The present study is an endeavour to assess prognostic importance of LDH in pre eclampsia. **Methods:** The study comprised of 50 women with singleton pregnancies with between 28 to 40 weeks of gestation complicated by preeclampsia admitted to Military Hospital, Shillong from March 2017 to February 2018. They were compared to 50 normotesive women admitted between the same time frame. **Results:** Women with pre eclampsia with severe features were typically young and primigravida. High serum LDH is associated with various maternal and perinatal complications like. **Conclusions:** Increased LDH is a prognostic marker of pre eclampsia with severe features .It can be used as a marker for early detection of pre eclampsia with severe features.Early detection can facilitate timely detection of patients with high risk patients.

KEYWORDS: Pre eclampsia, Gestational hypertension, LDH, LFT, Prognosis.

INTRODUCTION

Pre-eclampsia is a major cause of maternal and perinatal mortality and morbidity worldwide causing 24% of all maternal deaths in India.[1,2] Preeclampsia is a leading cause of maternal and perinatal morbidity and mortality, with an estimated 50,000–60,000 preeclampsia-related deaths per year worldwide.[3,4] It comprises of 5-8 % of all pregnancies.[5]

Human placentation relies on the trophoblastic invasion of the maternal decidua, myometrium and their blood vessels. Cytotrophoblastic cells invade and partially replace the endothelium of the maternal spiral arteries, leading to progressive dilatation of these vessels. Hypertension during pregnancy can be classified in four categories:1) preeclampsia–eclampsia, 2) chronic hypertension (of any cause), 3) chronic hypertension with superimposed preeclampsia; and 4) gestational hypertension.[6] Gestational hypertension may be defiened as ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic on two occasions at least 4 hours apart after 20 weeks of gestation in apreviously normotensive women.Preeclampsia is a pregnancy-specific hypertensive disease with multisystem involvement.It icludes high b. p. with new onset proteinuria or in absence of proteinuria may also include multisystem involvement.

Defective placentation is considered to be the major etiological factor in the development of pre-eclampsia and IUGR, both of which are major causes of perinatal mortality and morbidity worldwide.[7,8]

LDH is a intracellular enzyme foind in many body tissues like heart, muscle, kidney and erythrocyte.It acts as an indicator for various cellular disturbances and pathological states. LDH also acts as marker of severity of pre eclampsia. eclampsia, HELLP syndrome, abruptio placentae, pulmonary edema, DIC and acute renal failure.The present study is an endeavour to assess prognostic importance of LDH in pre eclampsia.

METHODS

The study comprised of 50 women with singleton pregnancies with between 28 to 40 weeks of gestation complicated by preeclampsia admitted to Military Hospital, Shillong from March 2017 to February 2018. They were compared to 50 normotesive women admitted between the same time frame.

Inclusion Criteria

1. Singleton Pregnancy between 28-40 weeks.
2. Age 20-30 years.
3. Women with pre eclampsia who were normotensive prior to 20 weeks.
4. No previous history of chronic hypertension.

Exclusion Criteria

1. Patients with chronic medical conditions.

- Diabetes Mellitus, Chronic renal failure, Chronic Hypertension , Gestational Diabetes, Viral Hepatitis, Alcoholic Liver disease.

2. Patients on hepatotoxic drugs: Antituberculardrugs and anticonvulsant drugs.
3. Multiple pregnancy.

Patients were divided into three groups. Group A comprised of patient of pre eclampsia with non severe feature(n=41) and Group B consisted of pre eclampsia with severe features(n=8). Group C comprised of control group i.e, normotensive patients(n=50).The three groups were matched according to age, gravidity, parity, maternal weight, and hemodynamic and laboratory result Informed consent was taken from all the patients. Detailed history and through examination was done. All relevant investigations were carried out. The relevant data obtained was recorded in the standard prepared proforma.

Following Lab parameters were studied

1. **Complete haemogram:** Hb%, PCV, platelet count.
2. **Coagulation profile:** PT, PTTK, INR.
3. **LFTs:** Total and direct bilirubin, AST/ALT/ALP, LDH.
4. **RFT:** Blood urea, serum creatinine, serum uric acid.
5. **Urine examination**: urine for albumin, dip stick for albumin, urine protein/creatinine ratio, 24 hr urine protein.
6. PBS for hemolysis.

Further management of the cases was decided depending on the clinical status of the patients and the Doppler report, and pregnancies were terminated as and when indicated. Mode of termination of pregnancy was decided depending on the clinical condition of patients and the indications.gestational age, presentation and position of the fetus, the severity and control of BP, fetal condition, complications in the mother. Patients were followed until discharge and LFTs were done 2 weeks after delivery At the time of delivery details such as baby weight, APGAR score, meconium staining of liquor and neonatal intensive care unit admissions were noted.

RESULTS

The age of the patients in this study ranges from 18 years to 36 years of which majority belonged to the age group of 21-25 years in all the three groups with a mean age of 22.8 years (SD 3.6 years)

Age in years	No. of patients	Percentage
<20	35	35
21-25	42	42
26-30	21	21
30-36	2	2
Total	**100**	**100**

A statistically significant decrease was noted in age, gravidity and parity among women with pre-eclampsia with severe features compared with normotensive and those with pre-eclampsia without severe features ($p<0.05$).

Group	Number	Age
Group A	42(42%)	24.5± 2.5
Group B	08(8%)	23±3.8
Group C	50(50%)	26±4.1

Table. 3. Shows distribution of parity among the three groups.

Group	Parity
Group A	1.1±1.2
Group B	1.4±1.8
Group C	2.5± 1.0

Out of 100 women in study 82 had normal LDH (<600 IU/L). 53 out of 82 patients had normal blood pressure. All the normotensive patients(control group) had normal LDH levels.

Patients with LDH levels between 600-800 IU/L was 14 and 10 had BP range between 140-160 mm of Hg systolic and 90-110mm of Hg and 4 had BP > 160 mm Hg systolic and >110 mm of Hg diastolic. 4 patients had LDH > 800 IU/L and all had BP > 160 mm Hg systolic and >110 mm of Hg diastolic. On stastistical analysis it was found that highsystolic and diastolic BP was associated with high serum LDH levels.

Table. 4. Mean LDH levels in various groups.

Group	LDH (Mean±SD IU/L)
Group A	624±.92.5
Group B	329±31.8
Group C	163± 32

When LDH level were < 600 IU/L there was no case of complications like eclampsia, HELLP syndrome, abruptio placentae, pulmonary edema, DIC and acute renal failure. When LDH level was between 600-800 IU/L one patient developed eclampsia and no other complication was seen in any other patient. When LDH levels were > 800 there was 2 case of eclampsia, 1 each of HELLP syndrome and abruptio placentae There was no case of DIC and acute renal failure in this group.

Table. 5. Shows comparision of perinatal outcome depending upon LDH levels.

Perinatal Outcome	LDH< 600 IU/L	LDH 600-800 IU/L	LDH > 800 IU/L
Birth Weight	2.8±0.6	2.5±0.72	2.1±1.1
Mean Gestational Age (weeks)	37± 1.4	36± 2.5	36±2.56
APGAR 1 min	7.4±2.4	6.1±2.52	5.3±2.45
APGAR 5 min	8.6±2.7	7.0±2.1	6.3±2.81
Intrauterine death	0	0	2(50%)
Neonatal Deaths	0	0	1(25%0

There was statistically significant maternal and perinatal complications with increasing LDH levels (p value <0.001).

DISCUSSION

Hypertensive disorders remain the most common medical complications during pregnancy, leading to a majority of adverse perinatal and maternal outcome, despite numerous efforts have been made at early diagnosis, prevention and treatment.In the present study LDH was studied as a marker of severity of preeclampsia.

Most of the patients in study group were young and nulliparous.The mean age in group of pre eclampsia without severe feature was 24.5± 2.5 years and that in preeclampsia with severe feature was 23±3.8 years.Mean parity in these groups were 1.1±1.2 and 1.4±1.8 respectively. On statistical analysis it was seen that there was significant increase in severity of disease with increasing LDH levels.

Qublan et al.9 found in their study that the mean LDH levels in normal controls was 299 ± 79 IU/l, in patients with mild preeclampsia was 348 ± 76 IU/l and in patients with severe preeclampsia was 774 ± 69.61 IU/l. Thus they demonstrated a significant association of serum LDH levels with severe preeclampsia ($P < 0.001$). In the present study the LDH levels were significantly raised with the severity of the disease ($P < 0.001$) and this was in accordance with the above study.These results are consistent with our study also.

In another study by Jaiswar S.P, et al[10] mean LDH levels of control group was 278.3±119.2 IU/l (normotensives). In mild preeclampsia group it was 400.45 + 145.21 IU/l in severe preeclampsia group it was 646.95±401.64 IU/l. These are also consistent with our study.

High LDH levels levels was associated with complications like eclampsia, HELLP syndrome, acute renal failiure, DIC,pulmonary edema, intrauterne death, low mean weight at birth, low 1 and 5 minute APGAR etc.It was also seen in our study that increasing levels of LDH was associated with increased maternal and perinatal complications. Similar findings were also seen in studies by Qublan et al[9] , Jaiswar S.P, et al[10] , Martin et al. [11] Catanzerite et al.[12]

CONCLUSION

Pre eclampsia is a multisystem disorder that has various maternal and fetal compications. Increased LDH is a prognostic marker and has got significant associations with these complications .It can be used as a marker for early detection of pre eclampsia with severe features.Early detection can facilitate timely detection of patients with high risk patients.

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