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EFFECT OF LACTATE DEHYDROGENASE (LDH) IN PREECLAMPSIA OF PREGANANY

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ABSTRACT:
Preeclampsia is responsible for significant maternal and perinatal mortality worldwide. Lactate dehydrogenase (LDH) is a multifaceted enzyme whose effects in pregnancy related complications e.g., preeclampsia (PE) is now gaining attention. Here we present evidence that LDH levels could contribute significantly to the outcomes of PE Lactate dehydrogenase is mainly an intracellular enzyme. The levels of LDH in serum are increased in clinical situations associated with cell damage, leak, and hemolysis and cell death. Preeclampsia is such a situation associated with these features. The present study was done to know the levels of serum LDH in preeclampsia patients and if there is an association between these LDH levels and the fetal outcome. A case control study was done with 100 pregnant women diagnosed with preeclampsia and 50 pregnant women without any complications as controls. LDH levels were found to be higher in preeclampsia patients compared to controls. The fetal outcome was poor in the group having high LDH levels. Levels of lactate dehydrogenase as a biochemical marker are easily available test which can be offered to all patients with Hypertension. LDH Levels can be used as a biochemical predicator for the prognosis of preeclampsia.

Keywords: Pregnant women, Preeclampsia, lactate dehydrogenase, LDH.

1. INTRODUCTION:

"Pre-eclampsia is a condition that is characterized by hypertension and proteinuria occurring after 20 weeks of gestation. It complicates 5–8% of all pregnancies.[1]It is a clinical diagnosis characterised by heterogeneous clinical and laboratory findings. Few studies suggest that there may be several underlying causes leading to endothelial dysfunction and causing the signs of hypertension, proteinuria and edema findings that allow making the diagnosis of the syndrome of pre-eclampsia[2,3] Preeclampsia is a multisystem disorders and lead to a lot of cellular death. It carries substantial risks for both fetus and mother with a subsequent increase in the perinatal and maternal morbidity and mortality.[4]The effects of LDH in pregnancy related complications like preeclampsia is now gaining attention. LDH is an intracellular enzyme and its level is increased in these women due to cellular death. Though cellular enzymes in the

extracellular space have no metabolic function, they are still of benefit because they serve as indicators suggestive of disturbance of cellular integrity induced by pathological conditions and is used to detect cell damage or cell death. So, serum LDH levels can be used to assess the extent of cellular death and thereby the severity of disease.[5]The present study was done to assess the prognostic significance of serum LDH as a marker of severity of preeclampsia and also its association with the fetal outcome.

2. MATERIAL & METHOD:

This prospective Hospital based study was conducted in Department of Obstetrics &Gynaecology, SMS Medical College, and Jaipur from April 2017 to March 2018. 100 pregnant Women in reproductive age between 20-35 years (including normotensive, mild preeclamptic, severe eclamptic&eclamptic women equally), were divided into Cases & Control. Healthy normotensive pregnant women were taken as Control. Cases were divided into 3 Subgroups: -

a) Mild preeclampsia

b) Severe preeclampsia

c) Eclampsia Cases and controls were also divided into 3 groups on the basis of serum LDH. Group I - serum LDH 800 IU/L All Pregnant healthy, preeclamptic and eclamptic women before termination of pregnancy after 28 wks of gestation were included in the study. Women with history of chronic hypertension, Diabetes mellitus, Liver, cardiac or renal disease or any other major illness, Women with history of drugs intake, smoking, alcoholism were excluded from study. Patients were considered in mild preeclampsia group if SBP was between 140-160 mmHg and DBP between 90-110 mmHg and in severe preeclampsia group if SBP >160 mmHg or DBP >110 mmHg. Follow up was done for perinatal outcomes. Concentration of serum LDH was analysed in auto analyser, LDH was measured by kinetic method.

3. RESULTS & DISCUSSION:

The mean value of serum LDH in control group was 391.4 ± 10.9 IU/L, in mild pre eclampsia 531.5 ± 24.5 IU/L, in severe preeclampsia 922.1 ± 515.5 IU/L and in eclampsia 1497.6 ± 602.1 IU/L. The difference in serum LDH level was highly significant. Level 160 mmHg. Women with serum LDH between 600-800 IU/L, none had normal systolic BP, 45.45% had Systolic BP between 140-160 mm Hg and 55.55% had Systolic BP >160 mmHg. Women with serum LDH level >800 IU/L none had normal Systolic BP, 29.41% had Systolic BP between 140-160 mmHg while 70.59% had Systolic BP >160 mmHg. Women with serum LDH level 110 mmHg. Women with serum LDH between 600- 800 IU/L, none had normal Diastolic BP, 81.8% had Diastolic BP between 90-110 mmHg and 18.2% had Diastolic BP >160 mmHg. Women with serum LDH level >800 IU/L none had normal Diastolic BP, 47.1% had Diastolic BP between 90-110 mmHg while 52.9% had Diastolic BP >110 mmHg. It signifies that the patients with higher serum LDH levels were having higher Systolic and Diastolic blood pressure. The difference in Systolic and Diastolic blood pressure was statistically highly significant (P800 IU/L was 33.6 ± 2.5 weeks .The difference in mean gestational age was statistically significant (P that women with serum LDH 800 IU/L, 11.8%

women had abruption, 11.8% had HELLP syndrome, 11.8% had Post Partum Hemorrhage, 5.9% had CVA, 5.9% had renal failure and 2.9% had pulmonary oedema. This signifies that increased serum LDH levels were associated with increased maternal complications. This difference was statistically highly significant. A high serum level of LDH were shown to have a high predictive value for significant maternal morbidity in various different studies.

Table 3.1: Distribution of cases according to serum LDH level

Sr. No.	Study Group	Mean Serum LDH (IU/L)	P – value
1.	Control	391.4 ± 10.9	P<0.05 S
2.	Mild Preeclampsia	531.5 ± 24.5	P<0.05 S
3.	Severe Preeclampsia	922.1 ± 515.2	P<0.05 S
4.	Eclampsia	1497.6 ± 602.1	P<0.05 S

Table 3.2: Distribution of cases According to Serum LDH and Blood Pressure & Gestational Age

Sr. No. A		**Systolic Blood Pressure (mm of Hg)**			
	Serum LDH (IU/L)	<140	140 – 160	>160	
1.	< 600	36.84% (35)	53.68% (51)	9.48% (9)	
2.	600 – 800	0	45.45% (5)	55.55% (6)	
3.	> 800	0	29.41% (10)	70.59% (24)	
	χ^2= 64 d.f.= 4				P<0.001 HS
B.		Diastolic Blood Pressure (mm of Hg)			
	Serum LDH	< 90	– 110	>110	
1.	<600	36.84% (35)	60% (57)	3.15% (3)	
2.	600 – 800	0	81.81% (9)	18.19% (2)	
3.	> 800	0	47.05% (16)	52.95% (18)	
	χ^2 = 21.8 d.f. = 4				P< 0.001 HS
C.	Serum LDH	Gestational Age (in weeks)			
1.	< 600	37.6 ± 1.80			
2.	600 – 800	35.72 ± 1.55			
3.	> 800	33.6 ± 2.522			
	F=51.3 d.f.= 2137				P<0.001 HS

4. CONCLUSION:

To conclude serum LDH levels has significant association with maternal blood pressure and with adverse maternal outcomes in preeclampsia and eclampsia. So it can be used as a prognostic tool for the severity of disease in preeclampsia and

eclampsia. So in hypertensive pregnant women with raised serum LDH levels, delivery should be conducted in a well-equipped tertiary care center with intensive antepartum, intrapartum and postpartum monitoring by expert obstetrician".

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