EVALUATION OF LACTATE DEHYDROGENASE- A BIOCHEMICAL MARKER OF PREECLAMPSIA

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ABSTRACT

BACKGROUND
Serum LDH level is a useful predictive biochemical marker of cellular injury which reflects the severity of preeclampsia. It is a prognostic marker for both mother and foetus. Hence, its assay is useful to decide management of preeclampsia.

The aim of the present study was to evaluate the LDH levels in normal pregnancy and in preeclampsia.

MATERIALS AND METHODS
The prospective case-control study was conducted at the Department of Obstetrics and Gynaecology, Mysore Medical College and Research Institute, Mysore. A total of 150 pregnant women were studied and divided as groups of mild preeclampsia (n=50), severe preeclampsia (n=50) and normotensive pregnant women (n=50) as control group. LDH was assayed in patients and compared with control.

RESULTS
Significantly higher values of serum LDH were found in mild and severe preeclamptic women when compared to normal pregnant women (p<0.0001). Also, the values of serum LDH was significantly elevated in severe preeclamptic women when comparison was done between mild and severe preeclamptic women.

CONCLUSION
From the present study, it can be concluded that elevated high serum LDH levels significantly correlate with the severity of preeclampsia.

KEYWORDS
Preeclampsia, Serum LDH, Endothelial Dysfunction.


BACKGROUND
Pre-eclampsia is a multisystem disorder, unique to pregnant women after twenty weeks of gestation. It is a progressive disease with a variable mode of presentation and rate of progression.
Exclusion Criteria

Prior history of pre-existing hypertension, diabetes, systemic or endocrine disorder, chronic renal disorder, epilepsy, liver disease, stroke, coronary artery disease, chronic infections, or multiple pregnancy, women with labour pain were excluded from study.

Informed consent was taken from the participants. Detailed medical and family history was also taken. Blood samples were collected for serum LDH estimation by continuing spectrophotometric method.16

Preeclampsia was diagnosed according to American College of Obstetrics and Gynecology (ACOG) criteria: a blood pressure higher than 140/90 mmHg and proteinuria more than 300 mg/24 hours were observed on at least two occasions more than 6 hours apart after the 20th week of pregnancy. Preeclampsia cases were classified as severe if diastolic blood pressure increased to at least 110 mmHg, proteinuria >5000 mg per day and the presence of headache, visual disturbances, epigastric pain, oliguria, elevated LFT, elevated RFT, thrombocytopenia.2

The results were expressed as mean ± SD and groups were compared using ANOVA. Statistical analysis was done by using SPSS software, version 22. The level of significance was set at p value <0.05.

RESULTS

In the present study, total of 150 subjects were studied, of which 50 (33.3%) were normotensives, remaining 100 patients (66.6%) belonged to preeclampsia group with each 50 patients (33.3%) in group B1 and group B2. The baseline characteristics of different study groups are presented in Table 1. Systolic and diastolic blood pressures (SBP, DBP) were significantly higher in preeclampsia groups when compared to normal pregnant women (p < 0.0001), also SBP and DBP were significantly higher on comparison between group B1 and B2 (p<0.001).

Mean LDH levels between the study groups are presented in Table 2. The mean LDH levels in the group A was 213.42 ± 82.38 IU/L, mild preeclampsia group B1 was 516.1 ± 175.91 IU/L and severe preeclampsia group B2 was 697.24 ± 216.11 IU/L. The mean LDH levels are significantly higher in preeclampsia group compared to normal pregnant women (p<0.0001). On comparing LDH levels between mild preeclampsia and severe preeclampsia, there was significant rise in the LDH levels with increasing severity of the disease (p<0.05). On analysis, it was found that high SBP and DBP were associated with higher levels of serum LDH (P < 0.001).

Table 3 presents comparison of LDH values between study groups. It is clear from the data that very high levels of LDH are frequently found in severe preeclampsia.

**DISCUSSION**

Preeclampsia is considered an idiopathic multisystem disorder that is specific to human pregnancy. The prevention of preeclampsia complication has become main task to reduce maternal and perinatal morbidity and mortality. Treating obstetricians have to be more alert to diagnose early and manage comprehensively to prevent further progression of the disease. Several potential biochemical markers have been proposed to predict the severity of preeclampsia.8,10 According to Qublan et al, the multiorgan dysfunction in preeclampsia caused by vascular endothelial damage, including maternal liver, kidney, lungs, nervous system, coagulation system will lead to excessive LDH leakage and elevated levels in serum due to cellular dysfunction, which may cause the occurrence of preeclampsia.7

LDH is an intracellular enzyme that converts lactic acid to pyruvic acid and elevated levels indicate cellular death.7,8 In our study, the levels of serum LDH was statistically significantly higher (p< 0.0001) in preeclamptic women as compared to normal pregnant women as shown in Table 2 and Table 3. These results are similar to many other studies.7,8,15,19

It is evident from present study that progressively increased LDH level in severe preeclampsia indicates progression of cellular injury with severity of this disorder as supported by Sarkar et al.8 Progressively raising LDH correlates with worsening of preeclampsia, maternal and foetal complications as supported by many studies.7,8,11-15,18

**CONCLUSION**

From the present study, it can be concluded that elevated high serum LDH levels significantly correlate with the severity of preeclampsia. Hence, estimation of LDH in preeclampsia serves as a prognostic tool which is useful for early diagnosis and timely management to reduce maternal and foetal morbidity and mortality.

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**REFERENCES**


