

Original Article

Estimation of serum lactate dehydrogenase in Pre-Eclampsia patients

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ABSTRACT

Background: Pre-eclampsia is a multisystem disorder that complicates 3%–8% of pregnancies in Western countries and constitutes a major source of morbidity and mortality worldwide. Lactate dehydrogenase (LDH) is an intracellular enzyme and its level is increased in these women due to cellular death. Hence; the present study was conducted to assess serum lactate dehydrogenase in Pre-Eclampsia patients.

Materials and methods: Sample size for the present study included 100 Pre-Eclampsia patients. Complete demographic, and clinical details of all the patients were obtained. Another set of 100 age-matched subjects were enrolled as study group who came for routine medical check-up. Blood samples were obtained and complete hematological and biochemical profile of all the patients was recorded. Serum LDH levels were noted by use of an auto-analyzer. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

Results: Mean LDH levels of the Pre-Eclampsia group were found to be significantly higher in comparison to the mean LDH levels of the control group. Mean LDH levels of the control group and Pre-Eclampsia group were 285.66 and 490.18 IU/L respectively.

Conclusion: Significant alteration in the serum LDH levels do occur in Pre-Eclampsia patients.

Keywords: Eclampsia, Lactate dehydrogenase, Serum

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INTRODUCTION

Pre-eclampsia is a multisystem disorder that complicates 3%–8% of pregnancies in Western countries and constitutes a major source of morbidity and mortality worldwide. Overall, 10%–15% of maternal deaths are directly associated with pre-eclampsia and eclampsia.¹ Some epidemiological findings support the hypothesis of a genetic and immunological etiology. The risk of pre-eclampsia is 2-fold to 5-fold higher in pregnant women with a maternal history of this disorder.^{2, 3} Pre-eclampsia may be life-threatening for both mother and child, increasing both fetal and maternal morbidity and mortality. In the mother, pre-eclampsia may cause premature cardiovascular disease, such as chronic hypertension, ischemic heart disease, and stroke, later in life, while children born after pre-eclamptic

pregnancies and who are relatively small at birth, have an increased risk of stroke, coronary heart disease, and metabolic syndrome in adult life.⁴ LDH is an intracellular enzyme and its level is increased in these women due to cellular death. So, serum LDH levels can be used to assess the extent of cellular death and thereby the severity of disease in this group of women. This can be further used as help in making decision, regarding the management strategies to improve the maternal and fetal outcome.^{5, 6} Hence; the present study was conducted to assess serum lactate dehydrogenase in Pre-Eclampsia patients.

MATERIALS AND METHODS

The present study was undertaken in the gynecology department for assessing serum lactate dehydrogenase in Pre-Eclampsia patients. Ethical approval was

obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. Sample size for the present study included 100 Pre-Eclampsia patients. Complete demographic and clinical details of all the patients were obtained. Another set of 100 age-matched subjects were enrolled as study group who came for routine medical check-up. Exclusion criteria for the present study included:

- Subjects with presence of any malignant neoplasm,
- Epileptic subjects
- Subject with any known drug allergy

Blood samples were obtained and complete hematological and biochemical profile of all the patients was recorded. Serum LDH levels were noted by use of an auto-analyzer. All the results were recorded in Microsoft excel sheet and were analyzed

by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 200 subjects were enrolled. Among these 200 subjects, 100 subjects were of Pre-Eclapmsia group while the remaining 100 patients were of control group. 27.1 years and 28.5 years was the mean age of the subjects of the control group and Pre-Eclampsia group respectively. 62.8 Kg and 64.2 Kg was the mean weight of the subjects of the control group and Pre-Eclampsia group respectively.

In the present study, mean LDH levels of the Pre-Eclampsia group were found to be significantly higher in comparison to the mean LDH levels of the control group. Mean LDH levels of the control group and Pre-Eclapmsia group were 285.66 and 490.18 IU/L respectively.

Table 1: Demographic data

Parameter	Control group	Pre-Eclampsia group
Number of patients	100	100
Mean age (years)	27.1	28.5
Mean weight (Kg)	62.8	64.2

Graph 1: LDH levels in between control group and Pre-Eclapmsia group (IU/L)

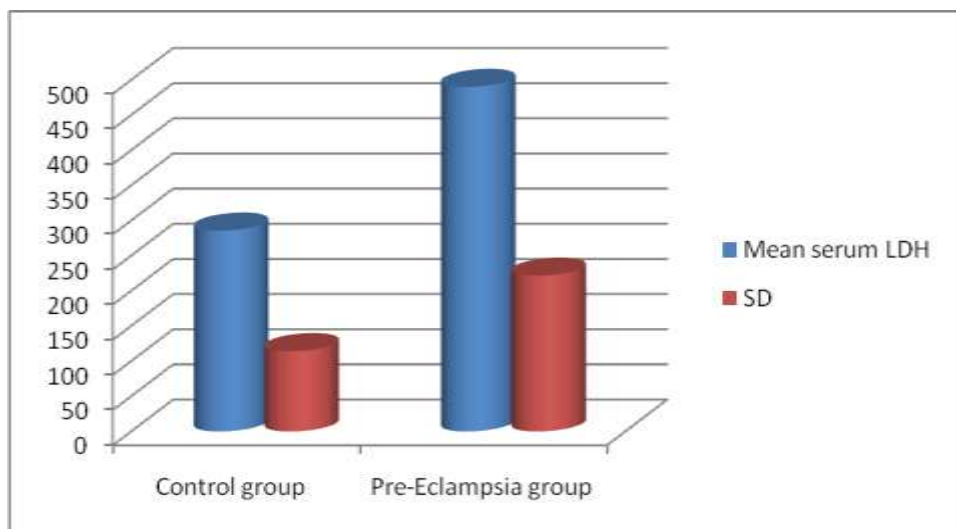


Table 2: Comparison of LDH levels in between control group and Pre-Eclapmsia group (IU/L)

Parameter	Control group	Pre-Eclampsia group	p- value
Mean serum LDH	285.66	490.18	0.00 (Significant)
SD	114.27	221.71	

DISCUSSION

Preeclampsia and eclampsia complicate 6–8% of all pregnancies and lead to various maternal and fetal complications. These are multisystem disorders and lead to a lot of cellular death. LDH is an intracellular enzyme and its level is increased in these women due to cellular death. So, serum LDH levels can be used to assess the extent of cellular death and thereby the severity of disease in this group of women.

In the present study, a total of 200 subjects were enrolled. Among these 200 subjects, 100 subjects were of Pre-Eclampsia group while the remaining 100 patients were of control group. 27.1 years and 28.5 years was the mean age of the subjects of the control group and Pre-Eclampsia group respectively. 62.8 Kg and 64.2 Kg was the mean weight of the subjects of the control group and Pre-Eclampsia group respectively. Jaiswar SP et al correlated the severity of the disease, maternal and perinatal outcome with Lactic Dehydrogenase (LDH) levels in serum in patients of preeclampsia and eclampsia. Out of 146 women studied, 39 were normal pregnant women, 35 were of mild preeclampsia, 36 of severe preeclampsia and 36 of eclampsia. LDH levels were significantly elevated in women with preeclampsia and eclampsia (<0.001). Higher LDH levels had significant correlation with high blood pressure ($P < 0.10$) as well as poor maternal and perinatal outcome. High serum LDH levels correlate well with the severity of the disease and poor outcomes in patients of preeclampsia and eclampsia.¹⁰

In the present study, mean LDH levels of the Pre-Eclampsia group were found to be significantly higher in comparison to the mean LDH levels of the control group. Mean LDH levels of the control group and Pre-Eclampsia group were 285.66 and 490.18 IU/L respectively. He S et al measured lactate dehydrogenase (LDH), alanine aminotransferase (ALT) and aspartate aminotransferase (AST) concentrations and platelet counts in 26 normal pregnant women and 51 preeclamptic women. In the normal-pregnancy group, no significant changes were found in the results of these tests. In the preeclampsia group, ALT and AST concentrations were not significantly higher than those in normal pregnancy, but the LDH concentrations increased and the platelet counts decreased significantly through the pregnancy. The increases in LDH did not correlate with changes in ALT or AST. Preeclamptic women with small-for-gestational-age (SGA) infants had significantly higher LDH concentrations than those in the appropriate-for-

gestational-age (AGA) group, but ALT and AST concentrations did not increase significantly. As reasons for the LDH increase in their subjects, liver damage was excluded and more active glycolysis in addition to severe cell damage due to chronic anoxemia were inferred. It is suggested that an increase in LDH is predictive of SGA infants in preeclamptic pregnancy, especially in those with normal liver function.¹¹ Qublan HS et al examined the relationship between lactic dehydrogenase concentration and the severity of the disease and the occurrence of its complications. One hundred eleven pre-eclamptic women (49 with mild and 62 with severe pre-eclampsia) and 60 healthy normotensive controls were studied prospectively. Demographic, hemodynamic, and laboratory data were compared among the three groups. The symptoms and complications of severe pre-eclampsia along with fetal outcome were analyzed according to the levels of LDH. The incidence of severe pre-eclampsia was 1.3%. Severely pre-eclamptic patients were significantly younger, with low gravidity and parity. Lactic dehydrogenase is a useful biochemical marker that reflects the severity of and the occurrence of complications of pre-eclampsia.¹²

CONCLUSION

Under the light of above obtained results, the authors concluded that significant alteration in the serum LDH levels do occur in Pre-Eclampsia patients. However; further studies are recommended in further for better exploration of results.

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