

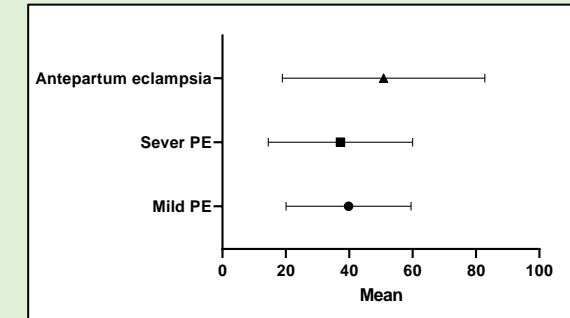
Title: Association of Serum Lactate Concentration with Severity of Pre-Eclampsia and Maternal Complications: An Observational Study

INTRODUCTION : Preeclampsia is a major contributor of maternal and perinatal morbidity and mortality. Placental hypoxia, secondary to generalized vasoconstriction is an early sign of preeclampsia leading to organ dysfunction and the multisystem presentation of the disease.^[4] In preeclampsia with severe features, the management is decided by a trade-off between the risks of iatrogenic prematurity and the risks of maternal complications. A reliable prediction of maternal complications is pivotal in selecting women for expectant management. Though multi-parametric risk-scoring system is in existence, such prediction is still moderate and there is a need for identifying new risk markers. Lactate formed in the final step of glycolysis acts as a substrate for gluconeogenesis and is produced by most tissues in the body. If the rate of cellular glycolysis exceeds the mitochondrial capacity or under hypoxic conditions, pyruvate is converted to lactate leads to increased levels of serum lactate. Literature reported that the enzyme lactate dehydrogenase has increased gene expression and activity in placentas from pregnancies complicated by preeclampsia and higher levels of lactate are secreted. Hence, elevated serum lactate levels indicate tissue hypoperfusion and can act as a reliable indicator for predicting the severity and development of maternal complications.

OBJECTIVE: To evaluate the association of serum lactate concentration with the severity of pre-eclampsia (PE) and maternal complications.

MATERIALS AND METHODS : This observational study was conducted at a tertiary hospital in Karnataka. The study included 170 antenatal women with pre-eclampsia and eclampsia (according to WHO) and excluded patients with gestational hypertension and chronic hypertension, pre-existing renal or vascular diseases and multiple gestation. Blood lactate concentration measured using a calorimetric assay and data analyzed.

RESULTS : The study participants included 61.1% cases severe pre-eclampsia and 20% of antepartum eclampsia. Significant association ($P = 0.03$) was found between the serum lactate levels and severity of pre-eclampsia (Figure) Maternal complications were observed in 50% study participants (85/170). Majority of the study participants had high serum lactate levels (> 27 mg/dL), establishing the association of raised serum lactate levels with maternal complications. However, a statistical significance could not be established.



CONCLUSION: Serum lactate is a major predictor of severity of pre-eclampsia. In case of pre-eclamptic patients presenting with maternal complications, serum lactate levels were elevated although no statistical significance could be established.

1. Khan KS et al. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006;367(9516):1066-74.
2. Gardosi Jet al. Classification of stillbirth by relevant condition at death (ReCoDe): population-based cohort study. BMJ. 2005;331(7525):1113-7.
3. Soleymanlou et al. Molecular evidence of placental hypoxia in preeclampsia. J Clin Endocrinol Metab. 2005;90(7):4299-308.

There is no conflict of interest between the authors of this paper.