Association and diagnostic value of serum uric acid level and perinatal outcomes in women with preeclampsia in Hospital Seberang Jaya

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ABSTRACT

Introduction: In pregnancies complicated by preeclampsia, elevated uric acid levels are recognised as potential markers of disease severity and adverse outcomes. While high uric acid is linked to complications like preterm birth and fetal growth restriction, a definitive threshold level for predicting these outcomes remains elusive. This lack of clarity hampers the effective use of uric acid measurements in clinical practice for managing preeclampsia. **Objectives:** To establish a predictive threshold value of serum uric acid level in preeclampsia and to study its association with perinatal outcomes. **Materials and Methods:** A retrospective study was conducted involving 326 preeclamptic women admitted to Hospital Seberang Jaya, Penang, between 1st January 2019 and 31st December 2022. Preeclampsia was diagnosed based on ISSHP criteria. Serum uric acid levels were measured, and Receiver Operating Characteristic (ROC) analysis with Youden's Index was employed to identify optimal threshold values for various outcomes. Binary logistic regression was used to examine associations between uric acid levels and perinatal outcomes. **Results:** Distinct uric acid thresholds were found to predict specific adverse outcomes. A level >351 µmol/L was significantly associated with preterm birth (OR 2.430; 95% CI 1.537–3.872; p<0.001), while levels >299 µmol/L predicted low Apgar scores (OR 7.784; 95% CI 2.760–32.618; p=0.001). Levels >401 µmol/L were linked to fetal death (OR 12.224; 95% CI 2.036–233.474; p=0.022), and levels >433 µmol/L correlated with small-for-gestational-age infants (OR 2.996; 95% CI 1.729–5.192; p<0.001). Additionally, intrauterine growth restriction was associated with levels >428 µmol/L (OR 2.533; 95% CI 1.029–6.126; p=0.039), and low birth weight with levels >353 µmol/L (OR 2.221; 95% CI 1.418–3.501; p=0.001). **Conclusion:** Serum uric acid levels above specific thresholds were significantly associated with higher risks of various adverse perinatal outcomes. These thresholds could aid in risk stratification and clinical decision-making in the management of preeclamptic pregnancies.