

July 19-20, 2018
Prague, Czech RepublicBiomark J 2018, Volume 4
DOI: 10.21767/2472-1646-C1-003

SERUM POTASSIUM/MAGNESIUM RATIO, URINARY IODINE CONCENTRATION, THYROID STIMULATING HORMONE, FASTING PLASMA GLUCOSE AND THE OXIDISED LDL/ALBUMIN RATIO: POTENTIAL BIOMARKERS OF PREECLAMPSIA

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Background: Several biomarkers have been investigated for their potential to identify women at high risk of preeclampsia and intervene to reduce the risk of related adverse outcomes. However, only a few have shown acceptable performance. Biomarkers from routine clinical tests, and those specific to micronutrient and macronutrient malnutrition, were investigated in relation to the risk of preeclampsia.

Methods: This case-control study included participants recruited at the Lomo Medical centre, Democratic Republic of Congo (DRC). They were 250 participants with preeclampsia and 150 age-matched pregnant women without preeclampsia. Trained nurses collected data following standardized procedures. Blood samples were assayed immediately to measure the full blood count, urea and electrolytes, high density cholesterol (HDL), total cholesterol, triglycerides, low density lipoprotein (LDL), oxidized low density lipoprotein (oxLDL), c-peptide and urinary iodine concentration (UIC) were determined.

Results: The serum potassium/magnesium ratio (K^+/Mg^{2+}), UIC, fasting plasma glucose (FPG), thyroid stimulating hormone (TSH), lymphocyte percentage (L/WBC %) and the oxidised LDL/albumin ratio (OxLDL/Alb) were identified as independent predictors of preeclampsia. Their respective cut-offs, sensitivity, specificity and the areas under the receiver operating curve (AUC), were: K^+/Mg^{2+} : ≥ 22 , 93%, 95% and 0.973; UIC: ≤ 239 $\mu g/L$, 98%, 80%, 0.920; FPG: ≥ 95 mg/dL, 81.2%, and 91.3%, 0.860; TSH: ≥ 3.9 mIU/L, 78%, 73%, 0.812; L/WBC%: $\leq 23.5\%$, 72.7%, 63%, and 0.773; and OxLDL/Alb: ≥ 7.0 , 80%, 65%, 0.746.

Conclusion: Serum K^+/Mg^{2+} and other analytes, some of which are easily acquired in routine practice, and reflecting various biological processes, had good performance at predicting prevalent preeclampsia.

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