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Evaluation of the uric acid-to-HDL ratio in patients with type 2 diabetes mellitus and its association with renal prognosis

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INTRODUCTION: Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder characterized by persistent hyperglycemia, commonly associated with obesity, physical inactivity, and unhealthy dietary patterns. Among its complications, Diabetic Kidney Disease (DKD) stands out due to its high prevalence and significant contribution to cardiovascular morbidity and mortality. Emerging biomarkers, such as serum uric acid (SUA) and its ratios with HDL cholesterol and creatinine, have been investigated as potential indicators of metabolic and renal risk. **METHODS**: This retrospective descriptive study analyzed secondary data from 1,232 patients with T2DM (HbA1c ≥7.0%), aged 40–70 years, of both sexes. Laboratory parameters included fasting glucose, HbA1c, creatinine, lipid profile, and SUA. The uric acid-to-HDL ratio (UHR) and uric acid-to-creatinine ratio (UCR) were calculated. Statistical analysis involved Spearman correlation and multiple linear regression models. **RESULTS**: Median HbA1c was 8.6%, with an estimated mean glucose of 200 mg/dL. Both UHR ($\rho = -0.150$; $p < 0.001$) and UCR ($\rho = -0.202$; $p < 0.001$) showed weak but significant inverse correlations with HbA1c. In adjusted models, HbA1c remained negatively associated with both ratios. Male sex was associated with higher UHR and lower UCR values. Age showed a negative association only with UCR. The regression models demonstrated limited explanatory power ($R^2 < 0.10$). **DISCUSSION**: The inverse relationship between glycemic control and the evaluated ratios suggests their potential as complementary metabolic markers. UCR demonstrated greater sensitivity to HbA1c variations and was influenced by age, whereas UHR appeared to be sex-dependent. These findings reinforce the complex interplay between glucose metabolism, lipid profile, and renal function in T2DM.

KEYWORDS: Type 2 diabetes mellitus; Uric acid; Dyslipidemias; Chronic kidney disease.

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