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Titel des Beitrags: Plasma Uromodulin Correlates With Kidney Function and Identifies Early Stages in Chronic Kidney Disease Patients.

Abstract: Uromodulin, released from tubular cells of the ascending limb into the blood, may be associated with kidney function. This work studies the relevance of plasma uromodulin as a biomarker for kidney function in an observational cohort of chronic kidney disease (CKD) patients and subjects without CKD (CKD stage 0). It should be further evaluated if uromodulin allows the identification of early CKD stages. Plasma uromodulin, serum creatinine, cystatin C, blood-urea-nitrogen (BUN) concentrations, and estimated glomerular filtration rate (eGFR CKD-EPIcrea-cystatin) were assessed in 426 individuals of whom 71 were CKD stage 0 and 355 had CKD. Besides descriptive statistics, univariate correlations between uromodulin and biomarkers/eGFR were calculated using Pearson-correlation coefficient. Multiple linear regression modeling was applied to establish the association between uromodulin and eGFR adjusted for demographic parameters and pharmacologic treatment. Receiver-operating-characteristic (ROC) analysis adjusted for demographic parameters was performed to test if uromodulin allows differentiation of subjects with CKD
Mean uromodulin plasma levels were 85.7 ± 60.5 ng/mL for all CKD stages combined. Uromodulin was correlated with all biomarkers/eGFR in univariate analysis (eGFR: \( r = 0.80 \), creatinine: \( r = -0.76 \), BUN: \( r = -0.72 \), and cystatin C: \( r = -0.79 \)). Multiple linear regression modeling showed significant association between uromodulin and eGFR (coefficient estimate \( \beta = 0.696 \), 95% confidence interval [CI] 0.603-0.719, \( P < 0.001 \)). In ROC analysis uromodulin was the only parameter that significantly improved a model containing demographic parameters to differentiate between CKD 0° and I° (area under the curve [AUC] 0.831, 95% CI 0.746-0.915, \( P = 0.008 \)) compared to creatinine, cystatin C, BUN, and eGFR (AUC for creatinine: 0.722, \( P = 0.056 \), cystatin C: 0.668, \( P = 0.418 \), BUN: 0.653, \( P = 0.811 \), and eGFR: 0.634, \( P = 0.823 \)). Plasma uromodulin serves as a robust biomarker for kidney function and uniquely allows the identification of early stages of CKD. As a marker of tubular secretion it might represent remaining nephron mass and therefore intrinsic "kidney function" rather than just glomerular filtration, the latter only being of limited value to represent kidney function as a whole. It therefore gives substantial information on the renal situation in addition to glomerular filtration and potentially solves the problem of creatinine-blind range of CKD, in which kidney impairment often remains undetected.