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Clinical Significance of Serum Creatinine-to-cystatin C Ratio on Renal Outcomes in Non-dialysis-dependent CKD patients: Results from the KNOW-CKD study

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Objectives: Sarcopenia is prevalent in chronic kidney disease (CKD) patients and is associated with poor clinical outcomes. The assessment of skeletal muscle mass and strength may help in decision-making in patient care, but it is difficult to perform. Recently, the serum creatinine-to-cystatin C ratio has been proposed as a surrogate marker for detecting muscle wasting. We aimed to evaluate the impact of the creatinine-to-cystatin C ratio on renal outcomes in non-dialysis-dependent CKD patients.

Methods: In this observational Korean Cohort Study for Outcome in Patients with CKD (KNOW-CKD), 1,452 patients with CKD stages 1-3 were analyzed. Men and women were separately categorized into quartile groups according to their creatinine-to-cystatin C ratio. The primary outcome was a composite of renal outcome consisting of a 50% reduction in estimated glomerular filtration rate (eGFR) or initiation of renal replacement therapy, whichever occurred first. Using Cox regression analysis, the association between the creatinine-to-cystatin C ratio and the primary outcome was analyzed.

Results: During a median follow-up of 6.0 (4.3-7.8) years, the primary composite renal outcome occurred in 325 (22%) patients within a median of 4.0 (2.8-5.8) years. After sequential adjustment with 15 variables in the fully adjusted Cox regression model, lower creatinine-to-cystatin C ratio groups (quartiles 1 and 2) had a poor primary outcome compared to the highest group (quartile 4); the hazard ratios for quartiles 1, 2, and 3 compared with quartile 4 were 2.41 (95% confidence interval [CI], 1.61-3.60), 1.93 (95% CI, 1.37-2.72), and 1.40 (95% CI, 0.98-2.01), respectively.

Conclusions: Serum creatinine-to-cystatin C ratio is an independent predictor of renal outcomes. A low creatinine-to-cystatin C ratio is associated with poor renal outcome.