



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Association Between eGFR Variability and Clinical Outcomes in Patients with Diabetic Kidney Disease

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Objectives : Chronic kidney disease (CKD) is a major healthcare burden, yet predictive markers for its progression remain limited. In patients with diabetes mellitus (DM), albuminuria is an established prognostic marker for kidney outcomes. Recently, estimated glomerular filtration rate (eGFR) variability has been proposed as an additional prognostic indicator. This study investigated whether eGFR variability predicts renal outcomes in patients with DM and CKD.

Methods : We included 436 non-dialysis DM patients with CKD stages 2–5 from a nationwide prospective cohort in Korea. eGFR variability was defined as the residual standard deviation derived from linear regression using eGFR values at baseline, 6 months, 1 year, and 2 years. Renal events included $\geq 50\%$ eGFR decline and kidney replacement therapy (KRT) initiation. Associations were evaluated using Cox regression, and albuminuria trajectories at 3 and 7 years were assessed using linear mixed models.

Results : During a median follow-up of 9.3 years (Interquartile range: 7.8-10.9 years), 374 patients who remained event-free at 2 years experienced 184 (49%) renal composite outcomes, 146 (39%) $\geq 50\%$ eGFR declines, and 145 (39%) KRT initiations. The low eGFR variability group had significantly lower baseline eGFR. Renal composite outcomes and KRT initiation were significantly less frequent in the high eGFR variability groups (p-value < 0.001 for both). On multivariable Cox regression, age, baseline eGFR, baseline urine albumin-to-creatinine ratio, eGFR slope, and eGFR variability were independent determinants of renal composite outcomes. Seven-year albuminuria trajectories were significantly lower in the high eGFR variability group, whereas 3-year trajectories did not differ significantly.

Conclusions : Higher eGFR variability is independently associated with better renal composite outcomes and lower long-term albuminuria, suggesting its potential as a favorable prognostic marker in patients with DM-associated CKD.