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Prognostic impact of estimated glomerular filtration rate on all-cause death and progression to end-stage renal disease in elderly diabetic patients

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Objectives: Age-adapted estimated glomerular filtration rate (eGFR)-based chronic kidney disease (CKD) criteria was recently proposed, but little is known about the eGFR threshold for mortality and kidney outcomes in elderly diabetic patients. We aimed to investigate prognostic impacts of eGFR on mortality and end-stage renal disease (ESRD) in elderly diabetic patients.

Methods: Elderly patients (≥65 years) with type 2 diabetes who visited our outpatient diabetes center during 2009 were identified and followed up until 2017. Patients were categorized into four groups per their eGFR: ≥60, 45 to 59, 30 to 44, and 15 to 29 mL/min/1.73m^2. Cox proportional hazard model for all-cause mortality and competing-risk analysis for ESRD (with a competing event of pre-ESRD death) were performed.

Results: Among 3,065 subjects, 19%, 8%, and 2% patients had eGFR 45 to 59, 30 to 44, and 15 to 29 mL/min/1.73m^2, respectively. After adjusting various covariates, including blood pressure, diabetes duration, proteinuria amount, HbA1c, and comorbidity index, patients with eGFR 30 to 44 and 15 to 29 mL/min/1.73m^2 have 1.51-fold (95% CI 1.17–1.95, P <0.001) and 2.66-fold (1.87–3.79, P <0.001) greater risks of death, respectively, whereas patients with eGFR 45 to 59 mL/min/1.73m^2 has a comparable risk (1.18, 0.96–1.45, P = 0.127) to those with eGFR ≥60 mL/min/1.73m^2. Substitution hazard ratios for ESRD were 2.29 (1.41–3.71, P = 0.001), 5.25 (3.27–8.41, P <0.001), and 16.74 (9.73–28.80, P <0.001) in patients with eGFR 45 to 59, 30 to 44, 15 to 29 mL/min/1.73m^2, respectively. In a subgroup of patients 75 or older (n=800), ESRD risk started to increase from eGFR <45 mL/min/1.73m^2.

Conclusions: Among elderly diabetic CKD patients, patients with mildly reduced eGFR (45 to 59 mL/min/1.73m^2) account for the largest population and have an increased risk of ESRD, but mortality risk increased from the eGFR under 45 mL/min/1.73m^2.