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만성신질환 초기 환자에서 경증의 급성 신손상이 신기능 저하에 미치는 영향

고대안암병원 신장내과

조은정, 김명규, 조원용, 김형, 조상경

The Effect of Minor Episodes of Acute Kidney Injury on Progressive Renal Dysfunction in Early Stage of CKD Patients

Eun Jung Cho, Myung Gyu Kim, Won-Yong Cho, Hyoung-Kyu Kim, Sang-Kyung Jo

Korea University Medical Center, Department of Internal Medicine, Division of Nephrology

Purpose: Several recent studies performed in in-hospital or intensive care unit settings revealed that dialysis requiring severe acute kidney injury (AKI) episode is a well-known risk factor for progression of chronic kidney disease (CKD) or increased long-term mortality. However, the impact of minor episodes of AKI in ambulatory, outpatient setting in patients with early stages of CKD has not been well studied.

Methods: We retrospectively assembled a cohort of stable, 391 ambulatory patients with stage 2 or 3 CKD who had more than three values of serum creatinine and visited outpatient clinic longer than one year. Our primary outcome was a 15 ml/min/1.73m^2 decline of estimated glomerular filtration rate (eGFR) and we analyzed the risk of CKD progression as a function of AKI episodes (increase of Scr $\geq$50% or $\geq$0.3 mg/dL). In addition, we also assessed the effect of eGFR variability defined as degree of deviation from the patient specific slope of eGFR on CKD progression.

Results: Over a mean follow-up of 905 days, 100 (25.6%) patients had AKI episodes. Only one patient needed renal replacement therapy and most patients (74%) showed less than two fold increase of eGFR. Patients with AKI episodes were older and more likely to have diabetes or hypertension and lower baseline GFR. More patients were taking diuretics or beta blocker than patients without AKI episodes. Mean follow up period was similar in both groups. We observed no mortality in our cohort during the follow-up period. Significantly more patients with AKI episodes reached primary outcome than patients without AKI episodes [19 (19.0%) vs. 18 (6.2%), p=0.001]. In multivariate-adjusted Cox proportional hazard model, AKI episode and baseline eGFR were independent predictors of CKD progression defined as $\geq$15 ml/min/1.73m^2 decline of eGFR (hazard ratio 5.515 for AKI vs. 1.039 for baseline GFR). However, eGFR variability was not found to be associated with faster progression of renal dysfunction.

Conclusion: Even minor AKI episodes in stage 2 or 3, stable ambulatory CKD patients are thought to be still a powerful risk factor for progression of CKD and a multi-sided approach to develop tools for prevention, risk stratification or early detection, should be continued to improve the ultimate prognosis.

Key Words: 급성 신손상, 만성 신질환, 예후
Acute kidney injury, Chronic kidney disease, Prognosis