

## 급성신손상이 만성콩팥병의 진행에 미치는 영향 : 전향적 Cohort 연구

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### AKI Accelerates Progression of CKD: respective Cohort Study

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Although recent several outcome analysis studies have called an attention to the important role played by acute kidney injury (AKI) in the progression of chronic kidney disease (CKD), lack of prospective controlled studies makes it difficult to reach a meaningful conclusion. The purpose of this study was to examine whether the presence of AKI accelerates progression of CKD and also to examine whether severity of AKI or new biomarkers could be served as useful predictor of CKD progression. We constructed a cohort of CKD patients who were hospitalized under diagnosis of AKI on CKD (n=93) from Jan. 2009. We classified severity of AKI by RIFLE criteria and measured initial serum, urine NGAL and urine KIM-1 as biomarkers of AKI upon study enrollment. We also constructed an age-sex matched cohort for control of CKD patients without AKI (n=89) and their serum creatinine was measured every three months, and clinical course was followed up in outpatient clinic. The primary end-points were defined as doubling of serum creatinine or initiation of maintenance renal replacement therapy (RRT). Kaplan-Meier curve was used to obtain probability to reach to the primary end-points and we also assessed the prognostic value of RIFLE criteria and biomarkers of AKI by logistic regression analysis. Mean age in AKI on CKD cohort were  $65.14 \pm 14.95$  yrs (male: 44.1%). The prevalence of diabetes and hypertension was 43.5 and 73.9%. Estimated GFR was  $42.12 \pm 20.43$  in stable CKD cohort,  $50.32 \pm 33.45$  in AKI on CKD cohort, respectively. Stages of underlying CKD were stage 1 (8.3%) stage 2 (14.3%), 3 (46.4%), 4 (27.4%), 5 (3.6%) and causes of AKI were ischemic 39.8%, septic 35.2%, toxic 13.6%, obstruction 3.4%. Severity of AKI was classified as risk (33%), injury (26.1%), and failure (40.9%). Seven patients (7.5%) needed RRT during AKI. Mean follow-up period were  $87.51 \pm 82.7$  days in AKI on CKD cohort, and Kaplan-Meier curve showed significantly high probability to reach to primary end-point in AKI on CKD cohort compared to stable CKD cohort ( $p=0.03$ ). However, stage of CKD ( $p=0.345$ ), RIFLE criteria ( $p=0.094$ ) and causes of AKI ( $p=0.228$ ) did not show significant correlation with outcomes. NGAL or KIM-1 could not predict primary outcomes (uNGAL  $p=0.397$ , sNAGL  $p=0.72$ , uKIM-1  $p=0.242$ ). In this prospective cohort study that is ongoing, episode of AKI is likely to accelerate the progression of CKD. Although severity of AKI nor new biomarkers could predict the progression, longer follow up with more patients will be needed.

**Key Words :** 급성신손상, 만성콩팥병, 예후

Acute kidney injury, Chronic kidney disease, Prognosis