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Clinical significance of acute kidney injury in lung cancer patients

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Objectives: Acute kidney injury (AKI) in cancer patients is related to increased morbidity and mortality. Previous our exploration of AKI in cancer patients showed unexpectedly higher incidence of AKI in lung cancer patients. This study aimed to evaluate clinical significance of AKI in lung cancer patients.

Methods: The patients diagnosed as lung cancer from 2004 to 2013 in Seoul National University Hospital were enrolled, and they were categorized two groups by an occurrence of AKI or not, and the patients with AKI were categorized three groups by AKI stage. AKI was defined according to KDIGO-AKI guideline. Demographic factors, co-morbidities, laboratory findings, count of enhanced computed tomography (CT), and treatment options such as surgery and chemotherapy were included as covariates in the multivariable analysis.

Results: A total of 3,926 patients were enrolled. Mean age was 64.0±10.5 years and 67.5% were male. AKI occurred in 1,798 (45.8%) patients during the follow-up period. Most AKI was mild AKI with stage 1 (91%). Among the patients with AKI, the median number of occurrence of AKI was 1 (interquartile range[IQR], 1-3), and median duration from cancer diagnosis to the occurrence of first AKI was 2.1 months (IQR, 0.73-7.77). 913 of patients with AKI experienced only once AKI in their follow-up duration. 2,530 (64.4%) deaths occurred during follow-up duration. We found that AKI development was demonstrated as a risk factor for mortality and progression to end-stage renal disease (ESRD) by Kaplan-Meier survival analysis. Time-dependent Cox proportional hazards modeling for mortality found that AKI development was an independent risk factor even after adjustment.

Conclusions: We found that 45% of lung cancer patients experience AKI event during their diagnosis and treatment period. Moreover, AKI occurrence was associated with higher mortality risk. Further studies about risk factor analysis for AKI occurrence should be needed to prevent AKI in lung cancer patients.