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Multicenter Matched Cohort for Acute Kidney Injury Linked to National Health Insurance Database in Korea

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Objectives: Acute kidney injury (AKI) is a global health issue associated with higher mortality and socioeconomic burden. However, large-scale AKI study based on clinical data linked to long-term outcome and socioeconomic prognosis are scarse.

Methods: We established a multicenter retrospective cohort from four tertiary hospitals and a total of 788,719 individuals who were tested for two or more serum creatinine (SCr) levels within 7 days were screened for AKI events. AKI events were defined as an increase of SCr by (1) more than 0.3mg/dL within 48 hours or (2) more than 1.5 folds within 7 days. Control group was defined as a group of individuals without any AKI event. Participants who were already receiving kidney replacement therapy or showed SCr ≥ 4mg/dL were excluded from the study. Then, the AKI and control groups were 1:1 exact matched based on clinical information including age, sex, department, time of test, and type of hospital visit.

Results: A total of 120,477 patients had at least one event of AKI. Of these, 83,623 AKI and control were matched, respectively. The distribution of matched pairs enrolled by centers was 23,688 (28.3%) from Seoul National University Hospital, 26,865 (32.1%) from Seoul National University Bundang Hospital, 24,856 (29.7%) from Keimyung University Dongsan Hospital, and 8,214 (9.8%) from Chung-Ang University Hospital. The mean age of the cohort was 65.81 ± 15.5 and 41.2% were female. The median baseline SCr level was 0.8 [interquartile range, 0.6-1.1] mg/dL. The AKI stages were as identified as follows: stage I, 84.5% (n = 75,110), stage II, 10.0% (8,854), and stage III, 5.5% (n = 4,887).

Conclusions: We constructed a large-scale AKI cohort to investigate epidemiology, risk factor, and prognosis of AKI. By further combining the cohort with National Health Insurance Database, we expect that this cohort could provide clinical evidence for the management of AKI.