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CKD & associated complications

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Death, Cardiovascular Events, and Renal Events in Chronic Kidney Disease: Korean CKD Patients from KNOW-CKD Cohort

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Background: Chronic kidney disease (CKD) is a rapidly growing disease worldwide, also in Korea. CKD patients present higher cardiovascular (CV) disease-related morbidity and mortality than the general population. It is important to make an early diagnosis and to provide treatment for CKD patients. Therefore, several countries establish their own CKD cohort. We explored the patient death, CV disease, and renal outcomes from large-scaled Korean CKD cohort.

Methods: We analyzed CKD patients from the prospective KoreaN Cohort Study for Outcome in Patients With Chronic Kidney Disease (KNOW-CKD) study enrolled form 2011 to 2015. A composite renal event is defined by > 50% decrease in estimated glomerular filtration rate (eGFR) from the baseline values, doubling of serum creatinine, or end-stage renal disease. The primary end points are death, CV events, and renal event.

Results: A total of 1,874 CKD patients were enrolled during the study period. Among them, 1,757 patients were analyzed for the follow-up outcomes. Five hundred fifty six patients (31.6%) had diabetes and 1,706 patients (97.1%) had hypertension. Seventy percent patients were ≥ CKD stage 3 [CKD stage 1: 191 (10.9%), stage 2: 325 (18.5%), stage 3:706 (40.2%); stage 4: 407 (23.2%); stage 5: 120 (6.8%)]. The primary causes of CKD were glomerulonephritis (647, 36.8%), diabetes (383, 21.8%), hypertension (347, 19.7%), and polycystic kidney disease (280, 15.9%). Patients were 53.7 ± 12.1 years old and 61.4% were male. During 32.6 ± 13.1 months follow-up, 25 (1.4%, 14.2/1000 patients-year) patients died, 82 (4.7%, 46.7/1000 patients-year) patients experienced CV events, and 255 (14.5%, 181.0/1000 patients-year) patients had renal events. Age adjusted standardized mortality ratio (SMR) was 2.2 [95% confidence interval (CI); 1.4-3.1]. SMR for CKD stage 3-5 patients was 2.3 (95% CI; 1.4-3.3) and for CKD stage 4-5 patients was 4.2 (95% CI; 2.4-6.5). Death for Korean CKD patients were lower (14.2 *vs.* 28.7/1000 patients-year) and renal events were higher (181.0 *vs.* 37.0/1000 patients-year) than USA CRIC CKD cohort. Male sex was marginally a risk factor for death. Old age, male sex and diabetes were significant risk factors for CV events. Male sex, diabetes, and CKD stage ≥ 3a were significant risk factors for composite renal events.

Conclusion: Death for overall Korean CKD patients was 2.2 times higher than age-matched general population. Particularly, it was 4.2 times higher for advanced CKD patients (stage 4 and 5ND) compared with general

population. Male sex and diabetes were significant risk factors for CV and renal events. Investigators will continue to follow the clinical course of the KNOW-CKD subjects over a long-term period and explore the risk factors of the adverse outcomes.

Keywords: cardiovascular disease, chronic kidney disease, death, renal event, Renal Impairment