Higher blood pressure increases the risk of mortality and progression to end-stage renal disease – multicenter large cohort study

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Objectives: Higher blood pressure (BP) is known to be associated with an increased risk of cardiovascular events and mortality in chronic kidney disease (CKD) patients. However, the clinical impacts of BP control and the ideal BP target in elderly CKD patients have not been well studied.

Methods: A multicenter CKD cohort from 2001 to 2016 was used. We examined the associations of systolic and diastolic BP with all-cause mortality and progression to end-stage renal disease (ESRD) using multivariable adjusted survival models.

Results: A total of 21,804 patients with complete data for multivariable analysis were enrolled. Systolic BP showed a U-shaped association with mortality and a linear association with progression to ESRD. Systolic BP less than 100 mmHg, or greater than 140 mmHg was significantly associated with higher mortality, regardless of the presence of diabetes or hypertension. In subgroup analysis of age, the patients with systolic BP ≥ 160 mmHg had a higher risk of mortality compared to those with systolic BP 120–139 mmHg (age < 50, hazard ratios [HRs], 2.43; 95% confidence interval [95% CI], 1.75-3.38; age 50–59, HRs, 2.05; 95% CI, 1.59-2.66; age 60–69, HRs, 1.64; 95% CI, 1.37-1.96; age 70–79, HRs, 1.51; 95% CI, 1.23-1.84). However, there was no association in those aged ≥ 80 years. The risk for progression to ESRD was also increased with higher systolic BP in CKD patients.

Conclusions: In the CKD patients, higher systolic BP was significantly associated with mortality and progression to ESRD; however, the effects were reduced in elderly patients (≥ 80 years).