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Hypertension is an important risk factor for future development of chronic kidney disease in over 5.6 million Korean adults with normal renal function and without proteinuria

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Objectives: Although there is well-established evidence of hypertension as a major risk factor for renal progression in patients with chronic kidney disease (CKD), there are few studies investigating its role in the renal progression of a population with normal renal function (NRF). Here, we analyze the correlation between blood pressure (BP) and renal function decline in Korean adults with NRF.

Methods: Data for the study were collected from the medical checkup database of the Korean National Health Insurance Service. People whose baseline estimated glomerular filtration rates (eGFR) calculated by the MDRD equation were less than 60 ml/min/1.73m² or whose baseline urinalyses showed proteinuria were excluded. Development of CKD was defined by the decline of eGFR to below 60 ml/min/1.73m². We followed up eGFR for 6 years from 2009 to 2015. We investigated CKD incidence according to the BP status through dividing systolic BP into 8 categories by 10 mmHg intervals, and diastolic BP into 7 categories by the same intervals. We categorized our study population into two groups of CKD and NRF according to the year 2015's eGFR levels.

Results: A total of 5,638,320 subjects were enrolled. During 6 years of follow-up period, CKD developed in 161,044 (2.86%) subjects. The CKD group was largely older, showed higher incidence of female and low-income, hypertension, diabetes mellitus, dyslipidemia, and obesity compared to the NRF group. Subjects whose systolic BP were more than 120 mmHg or whose diastolic BP were more than 70 mmHg had increased risk of progression into CKD, compared with subjects whose numbers for both measures were respectively less (odds ratio 1.037, 95% confidence interval 1.014~1.061 / OR 1.021, 95% CI 1.004~1.038).

Conclusions: These results demonstrate the role of BP in the progression toward CKD; we conclude that strict BP control will be helpful in preventing CKD in a non-CKD population.