

Effects of Blood Pressure According to Age on End-Stage Renal Disease Development in Diabetes Mellitus Patients: A Nationwide Population-Based Cohort Study

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Abstract : Background: Recent hypertension guidelines have recommended lower blood pressure (BP) targets in high-risk patients. However, there are no specific guidelines based on age or systolic and diastolic blood pressure (SBP and DBP, respectively). We aimed to assess the effects of age-related BP on the development of end-stage renal disease (ESRD) in patients with diabetes. Methods: A total of 2,563,870 patients with DM aged >20 years were selected from the Korean National Health Screening Program from 2009 to 2012 and followed up until the end of 2019. Participants were categorized into age and BP groups, and the hazard ratios (HRs) for ESRD were calculated. Results: During a median follow-up of 7.15 years, the incidence rates of ESRD increased with increasing SBP and DBP. The HR for ESRD was the highest in patients younger than 40 years of age with DBP \geq 100 mmHg. The effect of SBP and DBP on ESRD development was attenuated with age (interaction p-value was <0.0001 for age and SBP and 0.0022 for age and DBP). The subgroup analysis for sex, anti-hypertension medication, and history of chronic kidney disease (CKD) showed higher HRs for ESRD among males younger than 40 years, not taking anti-hypertension medications and CKD compared to those among females older than 40 years, anti-hypertension medication and non-CKD groups. Conclusions: Higher SBP and DBP increase the risk of developing ESRD in patients with diabetes, and in particular, younger individuals face greater risk. Therefore, intensive BP management is warranted in younger patients to prevent ESRD.

Keywords : hypertension, young adult, end-stage renal disease, diabetes mellitus, chronic kidney disease, blood pressure

Conference Title : ICRMCN 2022 : International Conference on Renal Medicine and Clinical Nephrology

Conference Location : Vancouver, Canada

Conference Dates : August 08-09, 2022