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Higher blood pressure (BP) in midlife is associated with a significantly increased risk of decreased renal function later in life, new study findings suggest.

In a study of 805 individuals, researchers found that higher systolic and diastolic BP in midlife was associated with lower measured glomerular filtration rate (mGFR) and higher albuminuria in late life.

These associations “suggest the important of midlife factors as a potential contributing factor of late-life kidney disease and offers possible strategies for prevention,” the authors concluded in a paper published online ahead of print in the *American Journal of Kidney Diseases*.

Study subjects were participants in the AGES (Age, Gene/Environment Susceptibility)-Reykjavik Study, a continuation of the Reykjavik Study, a community-based cohort established in 1967 to prospectively study cardiovascular disease in Iceland. The Reykjavik Study and the AGES-Reykjavik Study obtained clinical and other data from participants at midlife (ages 47–55 years) and late life (age 77–83 years), respectively. Subjects had a mean age in midlife and late life of 51.0 and 80.8 years, respectively.

In the AGES-Reykjavik Study, the mean measured GFR (mGFR) was 62.4 mL/min/1.73 m² and median albuminuria level was 8.0 mg/g. The researchers defined chronic kidney disease (CKD) as an mGFR below 60 mL/min/1.73 m²

or an albumin-creatinine ratio (ACR) above 30 mg/g. A total of 314 participants (39%) had mGFRs below 60 mL/min/1.73 m²

and 111 (13.8%) had ACRs above 30 mg/g.

The investigators, led by Leslie A. Inker, MD, of Tufts Medical Center in Boston, found that mGFR in late life was lower in participants with versus without midlife hypertension (59.8 vs. 63.9 mL/min/1.73 m²). They also observed a negative linear association between higher systolic and diastolic BP at the midlife visit with lower late-life mGFR (−0.99 and −1.41 mL/min/1.73 m²

for each 5.0 mm Hg increment in systolic and diastolic BP, respectively). The associations were attenuated after adjustment for age, sex, creatinine level and other potential confounders, but

they remained significant.

Dr. Inker's team found a significant positive linear association between higher midlife systolic and diastolic BP and higher ACR in late life. Each 5-mm higher systolic and diastolic BP was associated with a 5.6% and 9.2% greater ACR, respectively. After adjusting for midlife factors, the association remained significant with little attenuation, they noted.

The findings have several implications, according to the investigators. Their observation of the association of lower GFR and higher albuminuria in late life with midlife factors in addition to age raises the hypothesis that chronic kidney disease in the elderly may, in part, be preventable. In addition, the findings suggest that future research as to appropriate BP targets, especially in younger ages, is needed.

For the study, investigators measured GFR using plasma clearance of iohexol and albuminuria using 2 spot urine samples.

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