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Systolic Blood Pressure and CKD Progression in Primary Glomerular Disease

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Objectives: There is lack of evidence that BP goal suggested by current guidelines can also be applied to patients with glomerular diseases. We aimed to clarify the longitudinal association between blood pressure and CKD progression in patients with glomerular disease.

Methods: We studied 1,265 biopsy-proven patients who were diagnosed with primary glomerular diseases: 884 (69.8%) patients with IgA nephropathy, 179 (14.1%) with membranous nephropathy, 157 (12.4%) with focal segmental glomerulosclerosis, and 47 (3.7%) with coexisting two of the above glomerular diseases from 2005 to 2017. The main exposure of interest was cumulative mean SBP at every clinic visit and baseline SBP. The primary outcome was a composite of a ≥50% decrease in eGFR from baseline or end-stage kidney disease. We primarily used time-varying cox model for cumulative mean SBP.

Results: During 6,339 person-years follow up, the primary outcome occurred in 210 (16.6%) patients. The mean age was 43.7±15.0 years and baseline eGFR was 88.3±30.6 ml/min/1.73 m^2. 870 (68.8%) patients had the history of previous hypertension. Using time-varying Cox model, the adjusted hazard ratios for the primary outcome were 1.49 (95% CI, 1.00-2.21), 2.33 (95% CI, 1.50-3.62), and 2.22 (95% CI, 1.06-4.62) for SBP 120-129, 130-139, and ≥140 mmHg, respectively, compared with SBP of <120 mmHg. This association was particularly evident in patients with advanced CKD and higher proteinuria. (eGFR<45 mL/min/1.73m^2 or UPCR>1.5 g/g). The cumulative probability of primary outcome for SBP greater than 140 was significantly higher than those of any other SBP categories and the cubic spline curve analysis showed that there was a graded association of SBP with CKD progression. In contrast, baseline SBP did not associate with adverse kidney outcome.

Conclusions: Among patients with glomerular diseases, higher cumulative mean SBP was significantly associated with higher risk of CKD progression.