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The Prediction of systolic blood pressure at representative time-points for 24 hour mean systolic blood pressure on 1-year cardiovascular outcomes in chronic kidney disease patients

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Objectives : APrODiTe study suggested systolic blood pressure(SBP) of specific time-points that can represent the 24-hour mean SBP(mSBP) were 7:00 AM and 9:30 PM in chronic kidney disease(CKD) patients. We followed the study 1 year later and evaluated whether SBPs at these time-points can predict renal and cardiovascular outcomes after 1 year instead of 24-hour mSBP.

Methods : We recruited 378 hypertensive CKD patients from 4 centers in Korea 1 year later. Baseline SBPs at 7:00 AM and 9:30 PM were evaluated whether they have predictive correlation for the change of renal function, proteinuria and cardiovascular diseases after 1 year compared with 24-hour mSBP. The cardiovascular disease(CVD) meant coronary artery disease or stroke 1 year later. The renal outcomes were increased random urine protein/creatinine ratio than baseline value or decreased estimated glomerular filtration rate(eGFR) ≥ 5 (ml/min/1.73m2).

Results : Baseline mSBPs at 7:00 AM, 9:30 PM and 24-hour mSBP were 126.6 ± 23.4 mmHg, 128.6 ± 24.2 mmHg and 125.5 ± 22.1 mmHg. Baseline SBPs at 7:00 AM, 9:30 PM and 24-hour mSBP correlated with CVD in univariate analysis but, only SBP at 7:00 AM lasted the correlation with CVD than 24-hour mSBP in multivariate analysis (odds ratio: 1.019; 95% confidence interval: 1.002-1.036; P = 0.032). In subgroup analysis, the correlation between baseline SBP at 7:00 AM and CVD persisted in diabetes mellitus and late-stage CKD (stage 3-5) patients rather than 24-hour mSBP. Each of baseline SBP at 7:00 AM, 9:30 PM and 24-hour mSBP correlated with renal outcomes in univariate analysis (odds ratio: 1.017; 95% confidence interval: 1.004-1.030; P = 0.009, odds ratio:

1.017; 95% confidence interval: 1.005–1.030; P = 0.008, odds ratio: 1.026; 95% confidence interval: 1.012–1.041; P = <0.001, respectively) but not in multivariate analysis.

Conclusions : These data suggested that the baseline SBP at 7:00 AM may have better prediction on 1-year CVD rather than baseline SBP at 9:30 PM and 24hrs mSBP, especially in subgroup of diabetic or CKD stage 3–5 patients. Whereas the baseline SBPs at 7:00 AM and 9:30 PM may not be correlated to 1-year renal outcomes in CKD patients.

Keywords : representative systolic blood pressure, cardiovascular outcomes, chronic kidney disease patients