

Abstract Type : Oral

Abstract Submission No. : OR-1428

Effect of ambulatory blood pressure monitoring on renal outcome in patients with chronic kidney disease: prospective randomized comparative study

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Objectives: Adequate blood pressure (BP) control is pivotal for managing chronic kidney disease (CKD). Optimal means of monitoring blood pressure to delay progression of CKD is not yet clear.

Methods: This study is a prospective randomized comparative study for 18 months. Patients with hypertension and CKD were randomized into ambulatory blood pressure monitoring (ABPM) group or control group. All patients checked ABPM at baseline and 18 month, and ABPM group additionally checked ABPM at 3 and 6 month. BP target was <135/85 mmHg for ABPM group and <140/90 mmHg for control group. All patients were prescribed fimasartan. Primary end point was annual decrease of estimated glomerular filtration rate (eGFR), and secondary end point was renal events defined as either doubling of creatinine, eGFR halving or end-stage renal disease (ESRD).

Results: Among the total 179 enrolled patients, 87 patients were assigned to ABPM group and 92 patients to control group. While office BP was not different between the two groups at baseline, ambulatory BP was higher in ABPM group (140 ± 18 mmHg) than control group (134 ± 14 mmHg) ($P=0.008$). At baseline, eGFR was 43.6 ± 19.9 mL/min/1.73m² in ABPM group and 42.8 ± 20.9 mL/min/1.73m² in control group. Annual decrease of eGFR was -4.3 ± 8.3 mL/min/1.73m² in ABPM group and -4.4 ± 9.4 mL/min/1.73m² in control group ($P=0.966$). Renal event occurred in 12 patients (15.2%) from ABPM group, and in 8 patients (9.6%) from control group ($P=0.283$). By multivariate logistic regression, history of smoking (OR 8.297, 95% CI 1.206-57.068, $P=0.032$) and urine albumin-to-creatinine ratio (OR 1.001, 95% CI 1.000-1.001, $P=0.028$) were related to increased risk of ESRD.

Conclusions: The present study did not show a beneficial effect of ABPM monitoring in controlling hypertension in CKD patients for renal outcome, compared with conventional office BP monitoring.