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Ambulatory Blood Pressures in Managing Blood Pressures of Patients with Chronic Kidney Disease

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Objectives:

Ambulatory blood pressure (ABP) could give more accurate information of blood pressure in chronic kidney disease (CKD) patients. However, there are few clinical data suggesting ABPs estimate renal outcome more efficiently, compared to office blood pressures (OBPs).

Methods:

We enrolled 348 CKD patients from three tertiary referral hospitals. They underwent ABP monitoring and were followed for 38 months. Renal outcome was the incidence of end-stage renal disease (ESRD) which was collected from the ESRD registry of the Korean Society of nephrology. We compared the efficiency of risk estimation for incident ESRD between OBPs and ABPs.

Results:

The mean ABP was 131.9 /79.4 mmHg at initial examination. The estimated glomerular filtration rate and urine protein-creatinine ratio were 45.1 ± 21.6 ml/min/1.73 m2 and 1.5 ± 2.28 mg/mg creatinine, respectively. The correlations between OBPs and day-time ABPs, night-time ABPs, or mean ABPs in systolic and diastolic phases were weak (R-squared < 0.25 in all regression models). ESRD was developed in 13.4% of patients during observation period. The hazard ratio (HR) for mean ABP to estimate the incident ESRD was 1.027 [95% CI: 1.011-1.043, p=0.001] in systolic phase and 1.048 in diastolic phase [95% CI: 1.019-1.077, p=0.001] in Cox proportional hazard model adjusted with covariates. The day-time ambulatory systolic blood pressure (ASBP), day-time ambulatory diastolic blood pressure (ADBP), night-time ASBP and night-time ADBP were independently related factors to estimate incident ESRD. However, OBPs showed no significance. The HR of patients whose ABPs over 130/80 mmHg to have ESRD was 8.89 [95% CI: 1.738-14.476, p=0.003] compared to those under 125/75 mmHg. The HR for incident ESRD was 7.831 in patients UPCR >0.5 g/g cr.

Conclusions:

ABPs are more appropriate measurement to estimate the renal outcome compared to OBPs and should be target for management of blood pressure in CKD patients.