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Small changes in eGFR are associated with different patterns of 24-h ambulatory blood pressure monitoring in general population

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Objectives: Alteration of circadian blood pressure (BP) rhythm is associated with cardiovascular diseases and chronic kidney disease (CKD). However, most studies did not control for kidney function even though kidney function is an important risk factor. In this study, we tried to show 24-h ambulatory blood pressure monitoring (ABPM) patterns based on an eGFR in patients without CKD.

Methods: This study was a cross-sectional study from the data of the Korean Genome and Epidemiology Study, which is ongoing prospective cohort study. A total of 1733 participants (60.0±7.00 years, 938 women) who had an eGFR > 60 ml/min/1.73m² were included. Dipping status was stratified as reverse dipper (<0%), non-dipper (0% to <10%), and dipper (≥10%) based on the night to day ratio of mean BP. They were divided into 4 groups based on quartile of an eGFR (Q4, 128.6-101.6; Q3, 101.5-95.7; Q2, 95.6-87.4; Q1, 87.3-60.5). The highest quartile group (Q4) was fixed as the reference.

Results: The proportion of dipper was progressively decreased from the highest to the lowest eGFR whereas that of reverse dipper and non-dipper significantly increased. (P<0.001). In univariate analyses, Q1 and Q2 groups were significantly associated with increasing odds ratio (OR) with non-dipper, reverse dipper, and non-dipper plus reverse dipper. After full-adjustment with age, sex, hypertension, diabetes, body mass index, smoking status, exercise, and alcohol consumption, the lowest eGFR group was significantly associated with reverse dippers and non-dipper plus reverse dippers compared to the highest eGFR group (OR=1.689, 95% CI, 1.005-2.840; OR=1.427, 95% CI, 1.027-1.985, respectively). The significant linear trend of non-dipper plus reverse dipper with a decrease in eGFR was confirmed with the test for trend (P=0.024).

Conclusions: Small changes in eGFR are associated with different pattern of 24-h ABPM in general population. ABPM could be useful tool to detect patients with non-dipper in these population.