KSN 2017 Abstract

KSN-17-O026

The Association between Ambulatory Blood Pressure Patterns and Body Fluid Volume in Patients with Chronic Kidney Disease

Youn kyung KEE[1], Min-uk CHA[1], Misol LEE[1], Ki heon NAM[1], Seong yeong AN[1], Hyoungnae KIM[1], Seohyun PARK[1], Hae-ryong YUN[1], Jong hyun JHEE[1], Jung tak PARK[1], Seung hyeok HAN[1], Hyeon chang KIM[2], Sungha PARK[3], Shin-wook KANG[1,4], *Tae-hyun YOO[1]

[1]Internal Medicine, College of Medicine, Institute of Kidney Disease Research, Yonsei University, Seoul, Korea, Korea,South, [2]Preventive Medicine, Yonsei University College of Medicine, Seoul, Korea, Korea,South, [3]Internal Medicine, Cardiovascular Hospital Yonsei University Health System, Yonsei University College of Medicine, Seoul, Korea, Korea,South, [4]Internal Medicine, College of Medicine, Severance Biomedical Science Institute, Brain Korea 21 PLUS, Yonsei University, Seoul, Korea, Korea,South

Objectives : Abnormal dipping patterns of ambulatory blood pressure monitoring (ABPM) and excessive body fluid volume are frequently observed and both of them are significant risk factors for cardiovascular diseases in chronic kidney disease (CKD) patients. With lacking evidences of a link between volume overload and ABPM patterns in CKD patients, present study is aimed to elucidate the cardiovascular risk according to ABPM patterns and body fluid volume status in CKD patients.

Methods : Patients with CKD were prospectively enrolled by Cardiovascular and Metabolic Disease Etiology Research center (CMERC) of Yonsei University College of Medicine between November 2013 and December 2016. 24hour ABPM was performed and body fluid volume was assessed by the bioelectrical impedance analysis. And the ratio of extracellular water (ECW) to total body water (TBW) was calculated. Patients were divided into normohydrated (ECW/TBW < 0.389) and overhydrated state (ECW/TBW >0.390). Coronary calcium score and carotid-femoral pulse wave velocity (cfPWV) were also evaluated in study subjects.

Results : The mean age of the subjects was 60.4 years and 873 (54.3%) were men. Among the total of 1608 patients, 1132 (70.4%) patients were in normohydrated state and 476 (29.6%) patients were overhydrated. Overhydrated patients had older age, higher proportion of female, and had more comorbid diseases. Based on monitoring of office BP and ABPM, most of parameters for blood pressure (BP) in overhydrated group were significantly higher compared to those in normohydrated group. The proportion of

pathologic dipping pattern like non-dipper or reverse-dipper in overhydrated group was significantly higher compared to normohydrated group. In addition, body fluid volume overload was significantly associated with CCS and cfPWV. Multivariate logistic regression indicated that non-dipping patterns with overhydration was independently associated with increased CCS (OR, 2.504; 95% CI, 1.554-4.035; P < 0.001) and cfPWV (OR, 1.810; 95% CI, 1.061-1.105; P < 0.001).

Conclusions : Body fluid volume overload was associated with high BP and abnormal ABPM dipping patterns in CKD patients. In addition, abnormal dipping patterns combined with fluid overload were associated with increased cardiovascular risk in CKD patients.

Keywords : Ambulatory blood pressure monitoring, cardiovascular disease, chronic kidney disease, volume overload