KSN 2016 Abstract Submission

Dialysis

KSN2016ABS-1196

Relation of central and brachial blood pressure to volume status in peritoneal dialysis patients

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Background: Euvolemia is an important predictor of outcome in peritoneal dialysis (PD), but chronic subclinical volume overload occurs frequently in PD patients. Even though volume overload is associated directly with hypertension, blood pressure (BP) not always reflect volume overload. Central BP has been shown to be a better predictor for target organ damages compared with brachial BP in general population. In this study, we evaluated comparative values of central BP and brachial BP for determining volume status in PD patients.

Methods: We enrolled 52 prevalent PD patients, and accessed volume status using Body Composition Monitor (BCM). Central BP was estimated using radial artery tonometry, and brachial BP measurement at office and 24-hour ambulatory blood pressure monitoring (ABPM) were performed. Volume overload was defined as an overhydration (OH) ≥1.1 L.

Results: Average office central systolic BP (cSBP), office brachial systolic BP (bSBP), and ambulatory brachial systolic BP (24-bSBP) were 139.8±26.3, 140.7±19.2, and 142.5±22.0 mmHg, respectively. In overall, 41(78.8%) patients were in volume overload status. A stronger association of central BP with volume overload compared with brachial BP was observed in the receiver operating curve analysis (area under the curve (AUC) of cSBP, bSBP, and 24-bSBP were 0.87±0.06, 0.78±0.09, and 0.83±0.06 respectively). In multivariate analysis adjusted for age, sex, PD vintage, diabetes, and cardiovascular disease, the odds ratio (OR) for central BP (OR 1.110; 95% CI 1.019-1.210) was higher than those for brachial BP (OR 1.085; 95 CI 1.014-1.161 for bSBP and OR 1.094; 95% CI 1.021-1.173 for 24-bSBP).

Conclusion: Office central BP was more strongly related to volume status than out-of-office ambulatory brachial BP as well as office brachial BP, suggesting that central BP was more valuable than brachial BP in assessing volume status in PD patients. al BP with volume overload compared with brachial BP was observed in the receiver operating curve analysis (area under the curve (AUC) of cSBP, bSBP, and 24-bSBP were 0.87±0.06, 0.78±0.09, and 0.83±0.06 respectively). In multivariate analysis adjusted for age, sex, PD vintage, diabetes, and cardiovascular disease, the odds ratio (OR) for central BP (OR 1.110; 95% CI 1.019-1.210) was higher than those for brachial BP (OR 1.085; 95 CI 1.014-1.161 for bSBP and OR 1.094; 95% CI 1.021-1.173 for 24-bSBP).

Keywords: central blood pressure , peritoneal dialysis, volume status