Abstract

This study aimed to clarify the relationship between repeated measurements of casual (spot) and 24-hour urinary sodium-to-potassium (Na/K) ratios in patients with chronic kidney disease (CKD). A total of 61 inpatients with CKD, 31 in stage 1-3 (eGFR [estimated glomerular filtration rate] $\geq$ 30 ml/min/1.73m^2) and 30 in stage 4-5 (eGFR<30 ml/min/1.73m^2), aged 20 to 85 consuming a low-sodium diet (NaCl [sodium chloride] 6 g/day) were recruited. Urinary Na, K, and Na/K ratios were measured in both casual urine samples and 2-day, 24-hour urine samples, and then analyzed by correlation and Bland-Altman analyses. Mean 24-hour urine Na/K ratio was higher in participants in stage 4-5 (5.1) than in participants in stage 1-3 (4.1) CKD. Casual urine Na/K ratio was strongly correlated with 2-day, 24-hour urine Na/K ratio by sampling 4 casual urine specimens every morning and evening in participants in stage 1-3 (r=0.69-0.78), but not in stage 4-5 (r=0.12-0.19). The bias for mean Na/K ratio between 2-day, 24-hour urine and the 4 casual urine sampling ranged from -0.86 to 0.16 in participants in stage 1-3, and the quality of agreement for the mean of this casual urine sampling was similar to that of sampling 8 casual urine samples for estimating 2-day, 24-hour values. Methods using repeated casual urine Na/K ratios may provide a reasonable estimation of 24-hour urine Na/K ratio in normotensive and hypertensive as well as individuals with stage 1-3, but not stage 4-5 CKD.

(236 words)