Purpose The second morning urine (SMU) method developed by Kawai-saki is reliable and convenient for estimating the daily salt intake. On the other hand, Tanaka have developed more convenient method named as casual urine (CU) method in which a urine sample can be collected during the daytime. However, it remains unknown how reliable the CU method is. Using second morning urine samples, we compared the CU and SMU methods for estimating daily salt intake in relation to the 24-h collection method.

Methods Data were obtained from three previously reported studies (A, B, C), in which we evaluated the daily salt intake by the SUM method. Study A was done in 1,315 outpatients without restriction of their salt intake. In study B, 100 inpatients were given a daily salt intake of 7 g. In study C, 22 inpatients received a daily salt intake of 18 g for a week, followed by a daily salt intake of 8 g for another week.

Main outcomes The estimated salt intake was lower with the CU method than the SMU method in outpatients (study A). In inpatients with a daily salt intake of 7 g (study B), 8 g (study C), or 18 g (study C), the CU method was applied to SMU specimens. It underestimated, salt intake compared with the 24-h collection method, while the SMU method and 24UC method gave similar results.

Conclusions The CU equation underestimated salt intake when using urine collected during the morning, while the SMU equation gave accurate results.

ASSOCIATION OF E/EA AND NT-PROBNP WITH RENAL FUNCTION IN PATIENTS WITH ESSENTIAL HYPERTENSION

Yan Yang1, Yan Wang2, Ding-hiang Zhu1, Ping-jin Gao1. 1Department of Hypertension, Vascular Evaluation Center, Ruijin Hospital, Shanghai Institute of Hypertension, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, 200025, Shanghai, China

Background To evaluate the association of left ventricular (LV) diastolic function and N-terminal pro-brain natriuretic peptide (NT-proBNP) with renal function in essential hypertension.

Methods In 406 hypertensive patients (mean age, 59 ± 13 years), LV diastolic function was measured by the ratio of early diastolic transmural E wave velocities to tissue Doppler mitral annulus early diastolic Ea wave velocities (E/Ea) and NT-proBNP was determined. The subjects were classified into three groups: E/Ea ≤ 15 group (n = 85), 10 < E/Ea ≤ 15 group (n = 230) and E/Ea > 15 group (n = 91). The renal function was estimated by glomerular filtration rate (GFR) with 99mTc-DTPA. GFR from 30 to 59ml/min/1.73m² was defined as Stage 3 CKD. Urinary albumin/creatinine ratio (UACR) served to determine albuminuria.

Results GFR and UACR was significantly correlated with E/Ea and NT-proBNP (P < 0.0001). GFR was lower and UACR was higher in E/Ea ≤ 15 group than in 10 < E/Ea ≤ 15 group or E/Ea ≥ 15 group (P < 0.001). GFR had significant correlation with age, gender, E/Ea, IgNT-proBNP and IgUACR in multivariate analysis. Patients with higher NT-proBNP were characterized by poorer renal function, while GFR was even lower in patients of LV diastolic dysfunction with higher NT-proBNP. Patients with Stage 3 CKD could be detected by an elevation of NT-proBNP at a cut-off point of 103pg/ml or by increased E/Ea at a cut-off point of 12.4.

Conclusions LV diastolic function, assessed with E/Ea and NT-proBNP is associated with renal function in essential hypertension.

REGULATION OF D5 DOPAMINE RECEPTOR ON RENALASE expression and function in rat renal proximal tubule cells

Shaoxiang Wang1,2, Jiao Yang1,2, Ca Yu Chen1,2, Hongmei Ren1,2, Shuo Zheng1,2, Chengming Yang1,2, Xukai Wang1,2, Hongyong Wang1,2, Lin Zhou1,2, Chuanyu Zeng1,2. 1Department of Cardiology, Daping Hospital, The Third Military Medical University, Chongqing, China; 2Chongqing Institute of Cardiology, Chongqing, China

Background The dopaminergic and sympathetic systems interact to regulate blood pressure. Due to the regulation of renin angiotensin system by angiotensin II on Na-K-ATPase activity in kidney. Our previous studies show the regulation of dopaminergic receptor on a1-adrenergic receptor function. Due to the regulation of renin on sympathetic tone, we hypothesize that dopamine receptor, especially D5-like receptor, might regulate reninase in kidney.

Methods and Results The effect of D₅-like receptor agonist on renin expression and function was checked in immortalized renal proximal tubule (RPT) cells from Wistar-Kyoto (WKY) rats and spontaneously hypertensive rats (SHRs). It resulted that D₅-like receptor agonist, fenoldopam increased reninase protein expression and function in WKY RPT cells, but decreased it in SHRs. These effects were blocked by D₅-like receptor antagonist SCH 23390. Fenoldopam increased reninase mRNA level in WKY RPT cells, but not in SHRs. Fenoldopam increased degradation of reninase protein in both WKY and SHRs cells. However, the degradation degree was higher in SHRs than in WKY cells. The regulation of D₅-like receptor on reninase was mainly via D₅ receptor, because D₅ antisense blocked inhibitory effect of D₅-like receptor on reninase in WKY cells. However, PRC inhibitor blocked the effect of fenoldopam on renin expression; PRC agonist (PMA) inhibited reninase expression and function. Consistent with the in-vitro study, renin expression was lower in kidney from SHRs than in WKY rats.

Conclusions The studies indicated that D₅-like receptor, via D₅ receptor, regulates reninase expression and function in RPT cells.