

# KSN 2016 Abstract Submission

## *CKD & associated complications*

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### **Intracellular Water Balance Assessed by Bioimpedance Analysis Is Significantly Associated with Surrogates of Cardiovascular Risks in Patients with Chronic Kidney Disease**

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**Background:** Maintenance of fluid balance is essential to regulate physiologic function and blood pressure. Abnormal fluid homeostasis has been frequently observed and overhydration status was significantly associated with cardiovascular outcomes in patients with chronic kidney disease (CKD). However, the relationship between intracellular fluid status and the surrogates of cardiovascular risks in CKD patients is not fully investigated. Thus, the aim of this study is to identify the relationship between intracellular water (ICW) and renal function and to elucidate whether intracellular volume status correlates to the surrogates of cardiovascular risks in CKD patients.

**Methods:** The data was retrieved from the prospective observational cohort for Cardiovascular and Metabolic Disease Etiology Research Center-High Risk (CMERC-HI, NCT02003781). Fluid status was measured by bioimpedance analysis and ICW was adjusted by total body water (ICW/TBW), and intracellular dehydration (ID) was defined as less than the median value of the ICW/TBW. A total of 682 patients without overhydration (Extracellular water to TBW ratio < 0.40) with CKD was eligible in this analysis.

**Results:** The mean age was 59.2±11.4 years, and 401 (58.8%) patients were male. The median value of ICW/TBW was 0.617 [0.611-0.622]. ID group showed older (64.0±10.2 vs 58.0±11.1 years, P<0.001), more prevalent diabetes (160 [46.8%] vs 86 [25.3%], P<0.001) and sarcopenia (skeletal muscle mass index, 9.22±1.32 vs 10.27±1.42 kg/m<sup>2</sup>, P<0.001), higher central systolic blood pressure (cSBP, 132.7±19.9 vs 128.1±14.2 mmHg, P=0.001), and coronary calcium score (CCS, 54 [0-284] vs 9 [0-127], P<0.001), while central diastolic blood pressure (cDBP, 74.1±10.3 vs 76.9±9.1 mmHg, P<0.001) and estimated glomerular filtration rate (54.6±26.2 vs 64.3±24.5 ml/min/1.73m<sup>2</sup>, P<0.001) were significantly lower in ID group compared to the non-ID group. In multiple logistic regression analysis, higher cSBP (odds ratio [OR], 0.982; 95% confidence interval [CI], 0.965-0.999; P=0.044), lower cDBP (OR, 1.044; 95% CI, 1.012-1.077; P=0.006), and higher CCS (OR, 0.650; 95% CI, 0.466-0.906; P=0.011) were independently associated to the presence of ID in patients with CKD even after adjustment for multiple confounding factors.

**Conclusion:** Intracellular water status as well as extracellular volume status could be considered the surrogates of cardiovascular risks in patients with chronic kidney disease.

**Keywords:** Cardiovascular risk, Chronic kidney disease, Intracellular water