

# KSN 2016 Abstract Submission

## *Dialysis*

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### ANALYSIS OF THE VOLUME AND NUTRITIONAL STATUS OF HEMODIALYSIS OUTPATIENTS IN COMPARISON WITH POPULATION-BASED CONTROLS IN KOREA

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**Background:** For hemodialysis patients, overhydration and malnutrition could determine mortality and morbidity. It is known that the frequencies of overhydration and undernutrition are higher in hemodialysis patients than in population-based controls. This study aims to compare the volume and nutritional status of hemodialysis patients with those of the general population using bioimpedance and to identify the association with clinical and laboratory parameters.

**Methods:** This cross-sectional study was performed at the outpatient hemodialysis clinic in Seoul National University hospital. Body composition was measured by bioimpedance spectroscopy in outpatients undergoing maintenance hemodialysis and in population-based controls. Pretibial pitting edema, pre-hemodialysis chest X-ray and laboratory data including serum creatinine, albumin, and cholesterol were checked for hemodialysis patients in the same day of bioimpedance measurement. Relative overhydration (%) was defined as  $\text{overhydration (L)}/\text{extra cellular water(L)} \times 100$ .

**Results:** Bioimpedance was measured in a total of 149 hemodialysis patients within 30 mins of pre- and post-hemodialysis, and their bioimpedance results were compared with those of 770 persons selected from a general population through propensity score matching using the patients' age, sex, and BMI. In the two groups, the mean age was 62, proportion of male was 53%, and BMI was 23, without any difference. In intracellular water, there was no difference between pre-hemodialysis, post-hemodialysis, and control group, but extracellular water was significantly higher in pre-hemodialysis group than in the control group (L, pre, 13.4; post, 12.5; control, 12.0). Additionally, there were no differences in the estimated amounts of mineral, protein, fat, body cell mass, and visceral fat area among the pre-hemodialysis, post-hemodialysis, and control groups. However, the mean of fat free mass was higher in pre-hemodialysis than in the control group, but there was no difference compared to that of post-hemodialysis (kg, pre, 45; post 42.7, control 42.2). As the grade of pretibial pitting edema was higher, the relative overhydration (%) tended to increase. The laboratory markers (Pearson's

coefficient) associated with the higher relative overhydration value in hemodialysis patients included higher cardiothoracic ratio (0.43), lower leukocyte (-0.26), platelet (-0.34), protein (-0.38), albumin (-0.36), BUN (-0.30), creatinine (-0.45), uric acid (-0.45), phosphorus (-0.37), triglyceride (-0.23), TIBC (-0.28), PTH (-0.31), and higher aspartate aminotransferase ( $r=0.34$ ).

**Conclusion:** In this study, control group showed lower extracellular water than the pre-hemodialysis group, but there was no difference compared with post-hemodialysis group, and most bioimpedance parameters representing the general nutritional status did not show statistically significant differences between the post-hemodialysis group and the control group.

**Keywords:** bioimpedence, Hemodialysis, Nutritional status, overhydration, population