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Effects of volume status on body composition in incident peritoneal dialysis patients

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Background/Aims: Volume control is the most important issue in peritoneal dialysis (PD). Inadequate fluid removal or high water intake leads to overhydration, which result in malnutrition. The aim of the present study was to evaluate the effects of volume status on body composition in incident PD patients. **Methods:** All incident PD patients who survived ≥ 1 year after PD initiation were considered eligible. 366 incident PD patients were finally included and divided into 3 tertiles according to the time-averaged-edema index (TA-EI). The body composition parameters measured using bioimpedance analysis included the EI, skeletal muscle mass index (SMI, kg/m^2), fat mass index (FMI, kg/m^2), and appendicular muscle mass index (AMMI, kg/m^2). dSMI, dFMI, and dAMMI were defined as delta values for each variable. The cutoff value for sarcopenia (SP) was defined as previously reported. Patients with AMMI below the cut-off values were defined as having SP. **Results:** The number of participants in the low, middle, and high tertiles was 126, 100, and 140, respectively. A high volume status was associated with high solute clearance, albumin loss, and glucose absorption through the peritoneal membrane, which led to high dialysate glucose. In addition, volume status was inversely associated with increases in SMI or AMMI, but was not associated with changes in FMI. SP as a categorical variable was positively associated with a high volume status. On subgroup analyses (age, sex, and presence of diabetes mellitus), TA-EI had the greatest negative correlation coefficients for dSMI and dAMMI. In addition, the area under curve of the TA-EI for SP development was 0.660 (0.602–0.715, $p=0.002$; Figure). The sensitivity and specificity for predicting SP development by 1 year were 89.7% and 34.7%, respectively. **Conclusions:** Overhydration in PD patients was associated with decrease in muscle mass indices and the development of SP.

