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Dialysis

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PREVALENCE AND ASSOCIATED FACTORS OF OVER-HYDRATION AND UNDER-NUTRITION: COMPARISON BETWEEN PD AND HD

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Background: Volume and nutritional status have an important role in QoL and mortality in patients undergoing renal replacement therapy. Bioimpedance is gaining interest as a suitable tool for measuring volume and nutritional status. In this multi-centered cross-sectional study, we compared the over-hydration and under-nutrition in patients undergoing peritoneal dialysis (PD) versus pre-and post-hemodialysis (HD).

Methods: Body composition was measured by bioimpedance spectroscopy (BCM, Fresenius Medical Care, Germany) in our patients undergoing PD or HD from August 2012 to July 2015. Time-averaged volume overload (TAVO) and time-averaged lean tissue index (TALTI) were defined as the mean of pre- and post-dialysis volume overload or LTI in HD patients. Over-hydration was defined as the TAVO/Extracellular water ratio > 0.15, and under-nutrition was defined as a state below 10^{th} percentile of TALTI of a reference population.

Results: Between 116 PD and 115 HD patients, the age, sex, and BMI did not differ except for the prevalence of diabetes (PD, 35.7%; HD, 57.8%). Volume overload (L) of PD did not differ from that of pre-HD but was higher than that of post-HD (PD, 1.81L; pre-HD, 2.4L; post-HD, 1.0L). The prevalence of over-hydration did not differ between PD and HD (PD, 36 (31%); HD, 34 (29.3%)), either. As LTI was reduced, fat tissue index (FTI) increased (r^2=0.31). The frequency of under-nutrition was higher in HD than PD (PD, 34.9%; HD, 65.1%, p<0.001). Subgroup analysis of the non-diabetic subjects showed similar pattern (PD, 42.1%, HD, 57.9%, p=0.004), despite higher mean age of PD (PD, 59.1; HD, 54.3). The factors associated with over-hydration were diabetes, under-nutrition, lower BMI, higher blood pressure, lower albumin, BUN, and Kt/V while those associated with under-nutrition were HD, age, over-hydration, higher FTI, lower AST and ALP.

Conclusion: Frequency of over-hydration in PD was similar to that of HD but PD was superior in nutrition. Over-hydration and under-nutrition interacts with each other.

Keywords: bioimpedance, hemodialysis, Nutritional status, overhydration, peritoneal dialysis