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Factors Associated with the Changes of Residual Renal Function in the Incident PD Patients

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Preservation of residual renal function in peritoneal dialysis patient is essential to improve clinical outcomes. Edema might be associated with hypervolemia and could affect residual renal function in PD patients. To verify the factors associated with the changes of residual renal function (RRF) in incident PD patients, we kept the protocol, prospectively. Among new CAPD patients from May 2001 to April 2005 in our hospital, 154 patients who finished more than 6 months protocol (male : 78, mean age : 50.7±14.1 years old, DM : 78) were enrolled. Ultrafiltration volume (UFV) and daily peritoneal glucose absorption, 4.25% PET, adequacy and clinical indices such as C-reactive protein (hs-CRP) were measured at the 1st month and at every 6 months. RRF was calculated from averaging the urea and creatinine clearance by 24-h urine collection. And numbers of peritonitis, monthly mean arterial pressure (MAP) and antihypertensive drug amount (ACEI and ARB) were calculated. And volume status (ECF/TBW as edema index) was measured with multi-frequency BIA at the 1st month and at every 12 months. We analyzed the data with independent t-test and multiple regression by STATA. 1) RRF was significantly decreased with time on PD (1stm : 3.76±2.44, 6thm : 3.35±2.35, p=n.s., 12thm : 2.86±2.05, p<0.01, 18thm : 3.03±2.60, p<0.05, 24thm : 2.52±2.48, p<0.01, 30thm : 2.98±2.52, p=n.s., 36thm : 1.87±1.78, p<0.01, 42thm : 0.94±0.90, p<0.01). 2) ECF/TBW was significantly decreased at 12th and 24th months than 1st month (0.370±0.028, 0.360±0.020 and 0.356±0.022 at the 1st, 12th and 24th months, p<0.01). 3) The factors associated with the changes of residual renal function were ECF/TBW (beta coeff : -29.25, 95%C.I. : -44.36, -14.13, p=0.000), s-phosphate (beta coeff : -0.43, 95%C.I. : -0.61, -0.24, p=0.000), UFV (beta coeff : -0.001, 95%C.I. : -0.002, -0.001, p=0.000) and diabetes (beta coeff : 1.03, 95%C.I. : 0.25, 1.83, p=0.010) but not numbers of peritonitis, CRP, ACEI and/or ARB medication, and MAP. In conclusion, although edema was decreased with time on PD, not only well controlled edema but also not excessive ultrafiltration volume and control of phosphate especially in diabetes are important to preserve the residual renal function in PD patients.