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Effects of initial hypoalbuminemia on the longitudinal changes of residual renal function and peritoneal membrane in incident peritoneal dialysis patients; single center, long term follow up study

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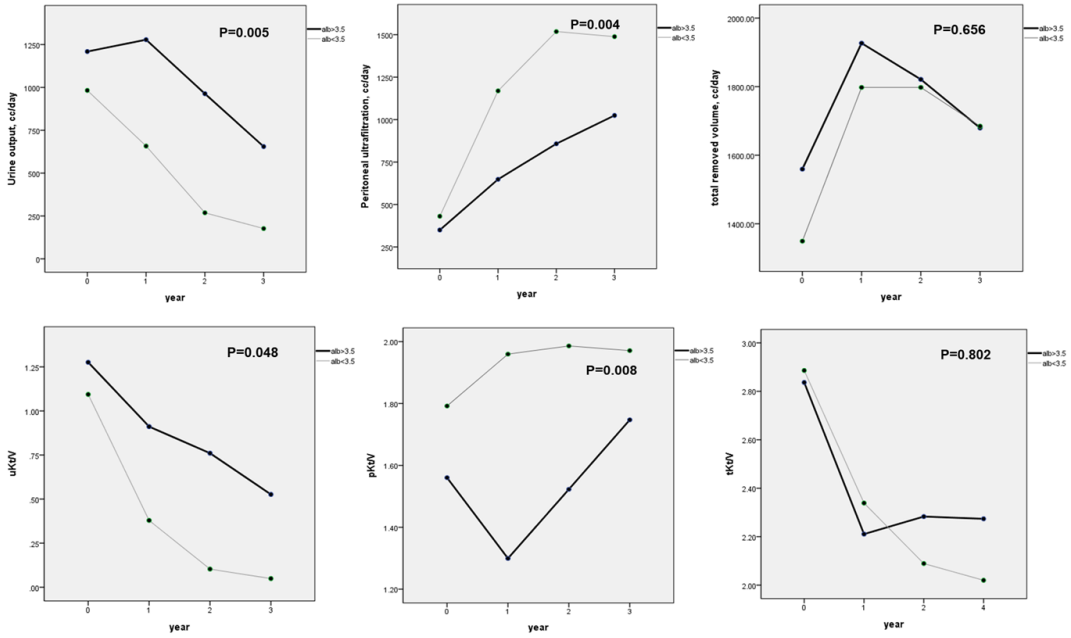
Objectives: Preserving residual renal function and peritoneal membrane are the most important factors for reducing patient mortality and technical failure rate in the maintenance peritoneal dialysis (PD).
Hypoalbuminemia was reported closely associated with increased patients' mortality and technical failure rate in PD patients. However, there were little studies that compared longitudinal changes of residual renal function or peritoneal membrane function according to the serum albumin level.

Methods: We retrospectively included patients who started PD between January 2010 and December 2015. We divided patients into two groups according to the initial serum albumin level. Hypoalbuminemia was defined as the serum albumin level lower than 3.5 g/dL. To compare longitudinal changes of residual renal function and peritoneal membrane status between two groups, we repeatedly collected data for urine output, uKt/V, peritoneal ultrafiltration, pKt/V, 4hr DPcr ratio per 1 year. We also checked technical failure rate and all-cause mortality rate of them.

Results: A total of 153 patients were included and 36.6% of them had hypoalbuminemia. During the median follow up period of 42.5 months, 9.8% of the patients were dead, 30.3% of the patients received kidney transplantation and the other 30.3% of the patients changed modality to hemodialysis. When we adjusted Kaplan-Meier survival analysis, all-cause mortality rate was significantly higher in the hypoalbuminemia group (log rank 0.001), however technical failure rate was not. In both groups, residual renal function showed decreasing trend, peritoneal UF and pKt/V showed increasing trend and their changing rates were more rapid in hypoalbuminemia group (Figure 1). 4hr DPcr ratio showed increasing trend however, its trajectory was not different between two groups (p=0.751).

Conclusions: Initial hypoalbuminemia was associated with rapid decline of residual renal function and increased all-cause mortality rate in incident PD patients. Thus, patients with hypoalbuminemia needed to be closely monitored.

Figure 1


P=0.005
Urine output, cc/day
year
alb>3.5
alb<3.5
P=0.004
Peritoneal ultrafiltration, cc/day
year
alb>3.5
alb<3.5
P=0.656
total removed volume, cc/day
year
alb>3.5
alb<3.5
P=0.048
uKdV
year
alb>3.5
alb<3.5
P=0.008
pKdV
year
alb>3.5
alb<3.5
P=0.802
tKdV
year
alb>3.5
alb<3.5