0150

Clinical Characteristics and Risk Factors Associated with Early-onset Peritonitis Among Patients On Peritoneal Dialysis

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Objective: To analyze characteristics and associated risk factors of early-onset peritonitis in patients undergoing continuous ambulatory peritoneal dialysis (CAPD).

Methods: In this retrospective observational cohort study, all incident PD patients in our PD center from Jan 1, 2006 to Dec 31, 2013 were recruited and followed up until Dec 31, 2014. Risk factors associated with the early-onset peritonitis were evaluated using Cox proportional model.

Results: Of 1744 patients on CAPD, 495(28.4%) developed at least one episode of peritonitis during a median follow-up of 32.1 months, of whom 101 patients developed peritonitis within the first three months. According to the occurrence time of the first episode of peritonitis, patients were divided into early-onset ($\leq$3 months) peritonitis (n = 101), and late-onset (>3 months) peritonitis (n = 394). Compared with patients with late-onset peritonitis, early-onset patients were younger (45.9 ± 13.9 vs. 51.0 ± 14.7, $p = 0.002$), had higher body mass index (BMI) (22.3 ± 3.3 vs. 21.4 ± 3.0, $p = 0.010$), neutrophil to lymphocyte (N/L) ratio (4.93 ± 1.98 vs. 3.23 ± 1.92, $p = 0.008$) and serum creatinine level (771 ± 253 vs. 704 ± 240, $p = 0.017$), but lower comorbidities index score (3.48 ± 1.72 vs. 4.02 ± 1.93, $p = 0.007$), proportion of temporary hemodialysis (17.8% vs. 39.9%, $p < 0.001$) and total cholesterol level (4.82 ± 1.28 vs. 5.22 ± 1.29, $p = 0.003$). In multivariate model after adjusting for gender, presence of DM, serum potassium, serum albumin as well as residual renal function, younger age (HR 0.98, 95% CI: 0.96–1.00, $p = 0.031$), higher BMI (HR1.09, 95% CI: 1.01–1.18, $p = 0.031$), higher education level (HR1.78, 95% CI: 1.04–3.03, $p = 0.035$) and higher level of N/L ratio (HR1.13, 95% CI: 1.04–1.23, $p = 0.03$) were risk factors associated with early-onset peritonitis. Compared with late-onset peritonitis, patients with early-onset peritonitis had worse technique survival ($p = 0.024$), while the patient survival rates between the two groups was comparable ($p > 0.05$).

Conclusion: Younger age, higher BMI, education level and N/L ratio are risk factors associated with early-onset peritonitis. Compared with late-onset peritonitis, patients developed early-onset peritonitis tended to experience lower death-technique survival rate.

0154

Association of Body Mass Index and Body Mass Index Change with Mortality in Incident Peritoneal Dialysis Patients

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Objectives: To investigate the prognostic effects of baseline body mass index (BMI) and BMI change within the first year of therapy in continuous ambulatory peritoneal dialysis (CAPD) patients.

Methods: We conducted a cohort study of incident patients who started CAPD therapy from January 2006 to December 2011. BMI was categorized according to World Health Organization classification for Asian population. BMI at baseline and one year after the initiation of peritoneal dialysis (PD) treatment was assessed to calculate the BMI change ($\triangle$BMI). Patients were split into four categories according quartiles (Q) of $\triangle$BMI: Q1< −0.80%; Q2: −0.80∼2.69%; Q3: 2.70∼7.40%; Q4: >7.40%. Kaplan-Meier method and Cox regression proportional hazard analysis were performed to assess the association of BMI on outcomes.

Results: A total of 1263 CAPD patients were enrolled, with a mean age of 47.8 ± 15.0 years, a mean BMI of 21.58 ± 3.13 kg/m^2. During a median follow-up of 25.3 months, obesity was associated with increased risk for cardiovascular diseases (CVD) death [adjusted hazard ratio (AHR) 2.01; 95 % CI 1.14, 3.54; P = 0.016], but not all-cause mortality. Additionally, patients with more BMI decline (>0.80%) during the first year after CAPD initiation had an elevated risk for all-cause (AHR: 2.21, 95% CI 1.23–3.95, P = 0.008) and CVD mortality (AHR 2.31, 95 % CI 1.11, 4.84; P = 0.026), which was independent of baseline BMI values.

Conclusion: Obesity on PD initiation and BMI decline >0.80% during the first year of PD therapy were associated with poor outcomes in incident CAPD patients. Further research is needed to determine whether this BMI range and fluctuation may attenuate the risk of these outcomes.

0165

Ferritin, High-sensitivity C-Reactive Protein and Mortality in Incident CAPD Patients

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Objective: As well-known as being a marker of body iron stores, serum ferritin has also been shown to be a marker of inflammation in dialysis patients. This study aimed to explore the relationship between ferritin and high-sensitivity C-reactive protein (hsCRP), as well as whether the association between ferritin and all-cause mortality was independent of hsCRP in incident continuous ambulatory peritoneal dialysis (CAPD) patients.

Methods: This is a retrospective cohort study. Incident CAPD patients in our PD center were enrolled from January 2007 to December 2011 and were followed up until December 31, 2013. Data of repeated measurements (every 3 months) of serum ferritin and hsCRP were collected. The ferritin concentrations were divided into four categories as <100, 100−500, 500−800, and >800 ug/l. Cox proportional hazards models were used to evaluate the association between ferritin and mortality.

Results: A total of 985 incident CAPD patients whose mean age was 47.1 ± 14.9 years were enrolled in this study, of which 59.9% (590/985) were male, and 25.1% (247/985) were diabetic. During a median follow-up of 36 months (interquartile range 23 to 49 months), 16.1% (159/985) patients died. Linear regression analysis indicated higher ferritin was associated with higher hsCRP (β = 7.2, 95% CI 3.2−11.2, P < 0.001) after adjusting for age, gender, body mass index, a history of diabetes and cardiovascular disease. Generalized estimating equation showed higher ferritin was associated with higher hsCRP (β = 4.3, 95% CI 1.5−7.1, P = 0.003). Higher log transformed ferritin was associated with increased all-cause mortality independently of hsCRP (HR = 1.23, 95% CI = 1.05−1.43, p = 0.009). Furthermore, patients with ferritin above 800 ug/l had an increasing risk for mortality (HR = 2.030, 95% CI = 1.107−3.721, p = 0.022) compared to patients with optimal ferritin concentration (100−500 ug/l) independently of hsCRP.

Conclusion: Higher serum ferritin was associated with higher hsCRP. However, higher ferritin was associated with increased all-cause mortality in incident CAPD patients independently of hsCRP.

0166

Timing of Peritoneal Dialysis Initiation and Mortality in Southern China

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Objective: The optimal time of dialysis initiation remains uncertain. The goal of this study was to compare survival outcomes in patients with early and late start of peritoneal dialysis in Southern China.

Methods: This is a retrospective cohort study. Incident CAPD patients in PD center were enrolled from January 2006 to December 2012, and followed up until December 31, 2014. Serum creatinine values were collected at the initiation of dialysis. Early, mid, and late start of dialysis were defined as eGFR >10.5, 7.5−10.5, and <7.5 mL/min/1.73 m^2, respectively. Cox regression analysis was used to evaluate the association between the timing of dialysis and all-cause mortality.

Results: A total of 1508 incident CAPD patients whose mean age was 47.5 ± 15.3 years were enrolled in this study, of which 58.6% (883/1508) were male, and 24.8% (374/1508) were diabetic. During a median follow-up of 36 months (interquartile range 20 to 54 months), 22.1% (334/1508) patients died. Compared with the late-start group, those in the early-start group were older (52.7 ± 15.6 vs. 43.2 ± 14.4 years, p < 0.001), and had a higher comorbidity index score [5 (3−6) vs. 2 (2−4), p < 0.001]. Compared