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Predictive Value of Red Blood Cell Distribution Width on All-Cause Mortality in ESRD Patients on Peritoneal Dialysis

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Background: Red blood cell distribution width (RDW), expresses variation in size of circulating erythrocytes, is a part of complete blood cell count test. Recent studies have demonstrated an association between RDW and adverse outcomes in patients with heart failure and coronary heart disease. Also, it has been found to be predictive of all-cause mortality in community-based cohorts irrespective of hemoglobin levels. As increased RDW levels are frequently observed in patients with end-stage renal disease (ESRD), we sought to determine whether RDW value is associated with mortality in ESRD patients treated with continuous ambulatory peritoneal dialysis (CAPD). **Methods:** A retrospective analysis was undertaken in 197 incident CAPD patients, who started CAPD between January 2005 and December 2010 at Yonsei University Health System and maintained CAPD for more than 3 months. Patients were divided into 2 groups according to the RDW levels at 3-month, and all-cause and cardiovascular mortalities were compared between groups. **Results:** The mean age was 55.1 years and 115 patients (58.4%) were male. RDW at 3-month ranged from 11.3 to 16.8% (mean 13.6±1.1%), and 51 patients (25.8%) showed elevated RDW value (>14.5%). There were significant positive correlations between RDW levels and age (r=0.22, p<0.01), Charlson comorbidity index (CCI) score (r=0.27, p<0.01), left ventricular mass index (r=0.28, p<0.05), left atrial volume index (LAVI) (r=0.26, p<0.01), the ratio of early mitral inflow velocity to peak mitral annulus velocity (E/E') (r=0.16, p<0.05) and left ventricular end diastolic dimension (r=0.271, p<0.01). In contrast, RDW values were negatively correlated with hemoglobin (r=-0.16, p<0.05) and albumin levels (r=-0.28, p<0.01). The all-cause mortality rates were significantly higher in the high RDW group (p<0.05). Cox regression analysis revealed that RDW was a significant independent predictor of all-cause mortality even after adjustment for age, gender, CCI score, hemoglobin, albumin, total cholesterol, LAVI, left ventricular ejection fraction (LVEF), and E/E' (HR 1.20, p<0.05). **Conclusion:** This study demonstrates that RDW provide a meaningful prognostic value on all-cause mortality in incident CAPD patients.

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Effect of diastolic dysfunction on Mortality and cardiovascular event in hemodialysis patients

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Background: Left ventricular diastolic dysfunction (LVDD) is common and cardiovascular complication represent the main factor limiting long term survival in patients with end-stage renal disease (ESRD). The aim of this study is to evaluate effect of LVDD on all-cause mortality and cardiovascular events in hemodialysis (HD) patients. **Method:** Study Design: two center retrospective study (Pusan National University Hospital/Yangsan Hospital) Setting &Participants: We reviewed medical records of 82 patients who checked echocardiograph just before starting HD and maintained HD for 458±328 days. Diastolic dysfunction was defined as mitral E/A ratio is ≥0.75, and average E/e' ratio is ≥10 using doppler and two-dimensional echocardiography (E: peak early filling velocity of mitral inflow, A: velocity at atrial contraction of mitral inflow, e': velocity of mitral annulus early diastolic motion). We classified the patients into two groups(patients with isolated LVDD, N=32 vs. patients with normal cardiac function, N=35). Result Patients with isolated LVDD were more common (N=32) than patient with systolic dysfunction (N=5) and mixed dysfunction (N=10). Patients with isolated LVDD were older than patients with normal cardiac function. But there was no significant difference in laboratory results and echocardiographic findings except E/e' and E/A. Clinical factors influencing diastolic dysfunction was absent. All cardiovascular events (N=8, angina pectoris, myocardial infarction) were occured in patients with isolated LVDD (p<0.001) and all cause mortality was higher in patients with isolated LVDD (p=0.186). In multivariate analysis, E/e'≥10 was an only independent risk factor for cardiovascular event among other echocardiographic finding representing diastolic dysfunction (HR=1.12, 95% CI 1.022-1.456. p=0.028). But there was no independent risk factor for all-cause mortality). There was no meaningful results about Kaplan Meier curve of overall survival among two groups. **Conclusion:** Isolated LVDD was more common than isolated systolic dysfunction. Patients with isolated LVDD have high risk for cardiovascular event and E/e'≥10 was a single predictor for cardiovascular event in HD patients.