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Left atrial function as a predictor of changes in residual renal function in patients with peritoneal dialysis

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Background: Left ventricular diastolic dysfunction (LVDD) has a high prevalence in patients with peritoneal dialysis (PD) therapy, and left atrial (LA) deformation analysis has been suggested as an alternative approach for estimating left ventricular (LV) dysfunction.

Purpose of this study: To investigate the independent predictors of residual renal function (RRF) in PD patients.

Methodology: A total of 82 PD patients (mean age: 60 ± 13 years; 61% men) were recruited and followed for 3 years. Assessed the LA myocardial function using LA strain (LAS, %) parameters (systolic [LAS-S], early diastolic [LAS-E], and late diastolic [LAS-A] during atrial contraction) by two-dimensional speckle tracking echocardiography (2D-STE) measured daily urine volume and total weekly urea and creatinine clearance (Kt/V and CrCl) by using 24 hours urine and dialysate. Patients were divided into non-LVDD and LVDD groups according to the recommendations of American Society of Echocardiography (ASE).

Findings: The results showed that LAS-A in the non-LVDD group decreased faster than the LVDD group after 3 years of follow-up. What's more, the LVDD group showed faster decline of RRF as evidenced by total Kt/V, renal Kt/V, total CrCl, renal CrCl and daily urine volume than non-LVDD group after 3 years of PD therapy. Meanwhile, there were close relationships between LAS-E and total Kt/V, renal Kt/V, total CrCl, renal CrCl and daily urine volume. In addition, multivariable regression analysis demonstrated that LAS-E was demonstrated as an independent predictor of changes of total CrCl and renal CrCl.

Conclusion: With LVDD, PD patients are prone to having faster decline of LA strain and RRF than those with normal diastolic function. The LA deformation parameters may be used as echocardiographic findings to predict the changes of RRF in PD patients. Therefore, maintaining LA function to protect LV diastolic function can prevent decline of RRF in PD patients.

Biography

Duo Huang is a PhD student of the University of Hong Kong and have majored in Cardiology. This study is her PhD project approved by the Institutional Review Board (IRB) of the University of Hong Kong/ Hong Kong Hospital Authority West Cluster.

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