

Cardiac Dysfunctions in Diabetic Patients at the Initiation of Hemodialysis

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Background: Patients requiring hemodialysis have high rates of cardiovascular morbidity and mortality. Diabetes mellitus (DM) is also an important risk factor for cardiac dysfunction. The present study investigated the prevalence and risk factors of cardiac dysfunctions in diabetic patients at the initiation of hemodialysis.

Methods: The database included 770 patients who examined echocardiography at the initiation of dialysis. Patients were classified into two groups based on presence of DM. We analyzed clinical factors and echocardiographic parameters. A chi-square test for categorical variables and an unpaired t-test for continuous variables were used to determine the differences between two groups. Univariate and multivariate logistic regression were applied to assess the risk factors associated with cardiac dysfunctions. Kaplan-Meier survival analysis was performed to investigate the association between cardiac dysfunctions and mortality.

Results: Diabetic patients showed higher prevalence of systolic dysfunction (58.67%, $p=0.000$) and diastolic dysfunction (96.33%, $p=0.020$) compared with non-diabetic patients. The prevalence of pulmonary hypertension did not differ between two groups. In the univariate analysis, DM is a predictor of systolic dysfunction ($p=0.000$) and diastolic dysfunction ($p=0.020$) at the initiation of hemodialysis. In the multivariate analysis, DM is an independent risk factor for systolic dysfunction (odds ratio, 1.912; 95% CI, 1.181-3.094; $p=0.008$). Patients with systolic dysfunction and pulmonary hypertension have higher rate of overall mortality ($p=0.000$, $p=0.005$, respectively). In diabetic patients with pulmonary hypertension, overall mortality was higher compared with non-diabetic patients ($p=0.000$).

Conclusions: At the initiation of hemodialysis, diabetic patients have higher prevalence of systolic and diastolic dysfunction. DM is an independent risk factor for systolic dysfunction. Systolic dysfunction and pulmonary hypertension are associated with increased overall mortality. DM is a risk factor for mortality in patients with pulmonary hypertension.

Key Words: DM, Hemodialysis, Heart failure