

The Prognostic Significance of Right Ventricular Function in Chronic Heart Failure

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Background: Patients with heart failure have a poor prognosis. While prognosis is usually presumed to be related to left ventricular function (LVF), right ventricular function (RVF) may also have a significant impact on prognosis.

Objectives: To evaluate the predictive value of RVF on clinical outcome in patients with chronic heart failure.

Methods: We prospectively evaluated 298 patients hospitalized with a definite clinical diagnosis of heart failure based on typical symptoms and signs. Qualitative echocardiographic data of RVF was analyzed. Patients were followed for a mean of 6.5 years for clinical outcome.

Results: Echocardiography showed that 111 of the patients (37%) had some reduction in RVF. A third (32) of these patients had severely reduced RVF. Age, gender, ischemic heart disease and risk factors in patients with reduced RVF were not significantly different from patients with normal RVF. However, a higher proportion of patients with reduced RVF had reduced LVF (75% vs 58%, $P < 0.01$) as well as more patients had mitral regurgitation (MR), (Severe MR: 22% versus 11%, $P < 0.05$). Pulmonary hypertension was also higher on average in these patients estimated by tricuspid inflow pressure gradient (45 vs 37 mmHg, $P < 0.01$). The long term survival rate in patients with reduced RVF by Kaplan-Meier survival curve was lower than in patients with preserved RVF (16% vs. 28%, respectively $P < 0.05$). RV size was also a predictor of reduced survival (16% vs. 26%, respectively $P < 0.05$). Severely reduced RVF was a significant independent predictor of mortality by Cox regression analysis (HR 1.87, 95% CI 1.22-2.89, $P = 0.004$) after adjustment for clinical characteristics, risk factors, as well as LVF, MR and pulmonary hypertension (Figure). Pulmonary hypertension was not an independent predictor of survival.

Conclusions: Poor RVF has significant prognostic impact in patients with chronic heart failure. This impact was independent of LVF, MR and pulmonary hypertension.