Frequency of isolated noncompaction as a cause of heart failure and heart transplantation: a single center experience

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Background: Isolated left ventricular noncompaction (IVNC) seems to be a rare cause of heart failure. The true incidence of IVNC as a cause of heart failure and heart transplantation is unknown.

Methods: Among 1,356 patients (pt) in the database of our heart failure clinic since 1987, 971 pt (72%, study population) had echocardiography performed at our hospital. Among these 971 pt, the following data were collected: definite diagnosis of heart disease, age at echocardiography, gender, incidence and age of heart transplantation. Echocardiographic diagnosis of IVNC was based on the following criteria: absence of coexisting cardiac abnormalities, segmental thickening of the left ventricular myocardial wall consisting of two layers: a thin compacted epicardial layer and a thickened endocardial layer with prominent trabeculations and deep recesses with a ratio of noncompacted to compacted myocardium 2:1 at end-systole, and Color Doppler evidence of flow within deep perfused intertrabecular recesses.

Results: There were 793 men (82%). Average age at echocardiography was 52±14 years. The main etiology of heart failure was: coronary artery disease (CAD) in 370 pt (38%), dilated cardiomyopathy (IDC) in 332 pt (34%), valvular heart disease in 112 (12%), congenital heart disease in 47 pt (4.9%), IVNC in 25 pt (2.6%), hypertensive heart disease in 22 pt (2.3%), hypertrophic cardiomyopathy in 14 pt (1.4%), idiopathic restrictive cardiomyopathy in 12 pt (1.2%), amyloidosis in 9 pt (0.9%), myocardiopathies: a thin compacted epicardial layer and a thickened endocardial layer with prominent trabeculations and deep recesses with a ratio of noncompacted to compacted myocardium 2:1 at end-systole, and Color Doppler evidence of flow within deep perfused intertrabecular recesses.

Conclusions: Among patients followed in a heart failure clinic, IVNC is a rare underlying cardiomyopathy for both heart failure (2.6%) and heart transplantation (in only 2% of patients) using the published diagnostic criteria.

1194 Diagnostical implications of right ventricular systolic dysfunction in patients with dilated cardiomyopathy

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Background: Unlike left ventricular (LV) function, right ventricular (RV) function has not been widely studied in ischemic patients. Evidence for the role of RV function is emerging in patients with heart failure of different etiologies.

Objectives: To investigate the diagnostic role of RV systolic dysfunction (RVSD) in idiopathic dilated cardiomyopathy (IDC) & ischemic cardiomyopathy (ICM).

Methods: A series of 102 patients with dilated cardiomyopathy, either non ischemic (n=49, IDC group) or ischemic (n=53, ICM group) & 20 healthy volunteers as a control group were included in this study. RV function was assessed by pulsed - wave Doppler tissue imaging (PWDTI) of tricuspid annular systolic (TASV) motion. Ejection Fraction (EF) of both RV & LV were estimated by Simpson’s rule. Coronary angiography was performed to rule out or out coronary artery disease. RVF was defined as a RV EF <35% of TASSV and RVF was defined as a <10% difference between RV and LV EF.

Results: Patients with IDC and ICM had comparable LV EF (36.7±7.2% vs 39±6.6%, p<0.1) and pulmonary artery systolic pressures (38.1±5.7 mmHg vs 35.8±7.5 mm Hg, p<0.08). TASSV & RV EF were significantly lower in IDC compared to ICM (10.6±1.2 cm/s vs 12.7±1.4 cm/s, p<0.001) & (34.1%±4.1% vs 47.6±7.5%, p<0.001) respectively. The prevalence of RVD & VC was significantly higher in the IDC compared with ICM (67.4% vs 77%, p<0.001) & (85.7% vs 15.1%, p<0.001 respectively. Reduced RV EF, low TASSV & RVF were powerful independent predictors of IDC compared with ICM (OR for each =0.78, 0.21, 0.63 respectively & 95% CI [0.72-0.85], [0.12-0.38] & [0.54-0.73] respectively, p<0.001 for each). Reduced TASSV had a positive predictive value (PV) of 48% & a negative PV of 9% to diagnose IDC, for reduced RV EF these values were 79% & 73%, and for VC, 85% & 87% respectively. The correlation between TASSV & RV EF was stronger in IDC compared with ICM (r=0.87, p<0.001 in IDC while r=0.69, p<0.001 in ICM) respectively.

Conclusions: PWDTI has a high predictive power for RVSD & in the presence of LVD, the combination of low TASSV, & reduced RV EF is a powerful marker for IDC compared with ICM, independent of pulmonary hypertension & LV EF. These findings support the concept that IDC is frequently characterized by a biventricular affection & that the presence of RVD represents a distinguishing feature of this disease.

1196 Myocardial fibrosis assessed by integrated back scatter is related to diastolic function and major cardiac arrhythmias in hypertrophic cardiomyopathy

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Interstitial fibrosis is increased in patients with hypertrophic cardiomyopathy (HCM), it influences left ventricular (LV) myocardial compliance and it is particularly high in patients who died suddenly. Ultrasonic integrated backscatter in diastole (IBS) correlates with myocardial collagen content in various experimental and clinical settings.

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