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ABSTRACTS OF THE 19TH CONGRESS OF ECHOCARDIOGRAPHY

Poster session: Right heart

Obesity effects on right ventricular function

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Objectives.— The effect of obesity on left ventricular (LV) characteristics has been previously documented, but much less is known about its effects on right ventricular (RV) function. The aim of this study is to assess the effects of obesity on right ventricular (RV) morphology and function.

Methods.— To study the effect of obesity alone, all participants underwent polysomnography to exclude sleep apnea. We included 19 healthy obese subjects (BMI > 30 kg/m²) (group 1) and 19 healthy controls (BMI < 25 kg/m²) (group 2). All included subjects had no evidence of hypertension, diabetes mellitus or ischemic heart disease. The 2 groups had similar mean ages, mean blood pressures and glucose levels. We used standard echocardiography and tissue Doppler imaging.

Results.— RV diastolic diameter, RV ejection fraction, the Tei index and pulmonary arterial pressure were similar in both groups. The tricuspid annulus systolic velocities obtained at the basal RV free wall were significantly decreased in obese subjects (7.6 ± 2.1 cm/s vs. 13.6 ± 2.3 cm/s, *P* < 0.01) reflecting the better sensitivity of tissue Doppler to identify subclinical RV systolic dysfunction. Also tricuspid annulus early diastolic velocities were markedly reduced in obese subjects (7.0 ± 1.8 cm/s vs. 11.1 ± 1.9 cm/s, *P* < 0.01) with lower ratio of early to late diastolic velocities reflecting impaired relaxation of the RV in obesity (0.69 ± 0.17 vs. 1.29 ± 0.23).

Conclusion.— Our data show the presence of subclinical RV dysfunction in obese subjects that was not related to other comorbidities such as sleep apnea. Tissue Doppler imaging is a useful tool to demonstrate RV abnormalities.

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Bisoprolol effect on the right ventricular function in chronic heart failure

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Beta-blocker use improves left ventricular ejection fraction (LVEF) in patients with heart failure. A similar effect of beta-blockers on right ventricular function has been proposed, although the effect of Bisoprolol on right ventricular function has not been assessed. This study investigated the short-term effect of Bisoprolol on right ventricular function in chronic heart failure patients. A cohort of 60 heart failure patients who were not taking beta-blockers at baseline was studied prospectively. Right ventricular ejection fraction

(RVEF) and LVEF were measured at both baseline and 6 months by echocardiography. Various parameters of the right ventricular function were measured: Simpson RVEF, surface shortening fraction, right ventricular outflow tract (RVOT %), TAPSE (mm), S' wave with tissue doppler (S' dticm/s), and the Tei index. The threshold of significance was fixed at 5%. Bisoprolol was up titrated during six months by a preestablished protocol to a target dose of 10 mg/Od. Mean age was 65.7 ± 16.3 years. Baseline RVEF was 25.6 ± 5.2% and baseline LVEF was 20.8 ± 6.4%. Mean Bisoprolol dose reached was 25 ± 12.5 mg daily. At 12 months, RVEF was significantly increased by 7.5% (95% confidence interval, 3.9–10.2; *P* = 0.0001) and LVEF also increased significantly by 7.5% (95% confidence interval, 4.0–11.9%; *P* = 0.0003). All the parameters of the right ventricular function were significantly improved: TAPSE (15.5 vs 12.7; *P* = 0.078), Doppler S' dticm/s (10.7 vs 8.2; *P* = 0.002), Tei index (54.10 vs 81.45; *P* = 0.0008, RVOT % (27.1 vs 19.3; *P* = 0.036), dp/dt RV (721 vs 505; *P* = 0.05). The efficacy and good tolerance of bisoprolol is demonstrated in this study on chronic heart failure with right ventricular dysfunction when administered in a precise pattern.

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Assessing right ventricular function: Cardiac MSCT scan versus transthoracic echocardiography (TTE)

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Objectives.— Assessing right ventricular (RV) function is still a challenge. MRI is considered as gold standard but not available in many times. We used a strategy based on systematic multiparametric approach to assess RV function compared with MSCT scan evaluation known to be well correlated to MRI.

Patients and methods.— From December 2009 to April 2010, 57 patients (mean age 56,7 ± 13, male 63,15%) have been referred to our institution to perform non invasive coronary arteries angiography using 64-MSCT. Three-dimensional RV ejection fraction (RVEF) was measured using commercially available software. Right ventricular fractional area change (RVFAC) was measured in axial plane and reconstructed in apical 4 chambers view. We also measured in the same views tricuspid annular plane systolic excursion (Scan TAPSE). TTE was performed the same day to assess RV parameters according to the more recent guidelines: tricuspid annular plane systolic excursion (TAPSE), tricuspid annular peak systolic velocity in Tissue Doppler Imaging (Sa tricuspid annulus), myocardial performance index (Tei index), right ventricular fractional area change (RVFAC). We studied correlations between TTE parameters and cardiac 64-MSCT scan. Right ventricular dysfunction was assessed using at least two parameters in TTE.