Cardiomyopathies: from pathogenesis to treatment 535

Methods: Fifty 18 month old male SHR were divided into two groups: control (CTL, n=25) and diabetic (DM, n=25). DM was induced by streptozotocin (40 mg/kg, i.p.). After nine weeks, the rats underwent echocardiography and myocardial functional study in Left Ventricular (LV) isolated papillary muscle preparations. LV samples were obtained to measure myocyte diameters, interstitial collagen fraction, hydroxyproline concentration, and gene expression of Atrial Natriuretic Peptide (ANP) and α- and β-Myosin Heavy Chain (MYHC) isoforms. Serum oxidant stress was assessed by measuring lipid peroxidation concentration and superoxide dismutase and glutathione peroxidase activities. Statistics: Student’s t test or Mann-Whitney test, p<0.05.

Results: DM group presented higher blood glucose (487±29 vs. 89.1±21.1 mg/dL) and lower body weight (277±26 vs. 339±38 g). Systolic blood pressure did not differ between groups (CTRL: 193±34; DM: 201±36 mmHg). Echocardiography showed LV and left atrial dilation, LV diastolic and relative wall thickness decrease, and LV systolic and diastolic function impairment in DM. Papillary muscle study showed decreased myocardial contractility and contractile reserve in DM. Myocyte diameters and myocardial interstitial collagen fraction and hydroxyproline concentration did not differ between groups. Increased serum pro-oxidant activity and gene expression of ANP (CTRL: 1.00±0.38; DM: 1.88±0.69) and β-MYHC ratio (CTRL: 1.20±0.60; DM: 2.26±0.94) were observed in DM.

Conclusion: Diabetes mellitus induces cardiac dilation and functional impairment, increases oxidative stress and activates fetal gene program in aged spontaneously hypertensive rats. Support: CAPES and CNPq.

P2984 | BEDSIDE

Very late effects of dual chamber pacing therapy for obstructive, hypertrophic cardiomyopathy
A. Lacson1, L. Paladini1, D. Pavlin1, E. Donal1, N. Behari1, C. Leclercq1, P. Mabo1, J.C. Daubert1, 1CHU Rennes, University Rennes 1, Rennes, France; 2Hospital of Lorient, Department of Cardiology, Lorient, France

Background: The very long-term effects of dual chamber pacing as a primary treatment for hypertrophic obstructive cardiomyopathy (HOCM) are poorly known and controversial.

Objective: To examine the intermediate- and long-term clinical and hemodynamic effects of permanent, dual chamber pacing in patients presenting with HOCM.

Methods: Between 1991 and 2007, 51 patients (mean age = 59±14 years) presenting with HOCM and New York Heart Association (NYHA) functional class ≥2 despite optimal medical therapy, underwent implants of DDD pacemakers with or without defibrillator and were followed for 11.5 years (range 0.4 - 21.8).

Results: During follow-up, no patient underwent myocardectomy or septal alcohol ablation. NYHA functional class and other disease manifestations decreased significantly between 1 and 2 years of follow-up and remained stable thereafter. The left intraventricular (LV) gradient decreased by a mean of 78% between 1 and 2 years, to reach 89% at the end of follow-up, along with the disappearance of systolic anterior motion of the mitral valve. Mean LV ejection fraction decreased from a mean of 64±8% before pacing to 56±9% at the end of follow-up (P<0.05), while LV end-diastolic diameter did not change significantly. The 5- and 10-year actuarial survival rates were 80 and 65%, respectively. Among 22 deaths, 10 were due to cardiovascular and 12 to non-cardiovascular causes; 2 patients underwent cardiac transplantation after 8 and 13 years of DDD pacing, respectively.

Conclusions: In this sample of patients suffering from HOCM, DDD pacing alleviated symptoms and improved hemodynamic function over the very long term. The merits of this treatment should be revisited in a controlled trial.

P2985 | BEDSIDE

Effects of hypothyroid, focal and diffuse fibrosis on echocardiographic derived regional and global myocardial strain in hypertrophic cardiomyopathy
V. Patel, D.M. Sado, J.C. Moon, P. Elliott. The Heart Hospital, University College London Hospital Trust, London, United Kingdom

Purpose: To evaluate the influence of hypothyroid and myocardial fibrosis on echocardiographic-derived strain in hypertrophic cardiomyopathy (HCM).

Methods: 38 patients with HCM underwent 2D transthoracic echocardiography and cardiovascular magnetic resonance (CMR) at 1.5T. Global (GLS) and regional longitudinal strain (RLS) was measured using an Echopac workstation. Standard late gadolinium enhancement (LGE) imaging was used to quantify focal fibrosis. T1 was assessed before and at 15 minutes after bolus of contrast (Gadoteric acid) in a basal, mid and apical short axis slice. Measurement of blood haematocrit allowed calculation of the segmental and global myocardial extracellular volume (GEC) reflecting both focal and diffuse fibrosis.

Results: Mean ± sd: Age 47.9±14.4yrs; Maximal wall LV thickness (MWT) 18.2±4.8cm; GLS -14.6±4.8%; global GEC 0.317±0.042; Median [IQR]: Left ventricular mass index (LVMI) 124.17 [87.75–161.00] g/m²; LGE 6.35 [1.28–11.38]%.

Conclusions: Global longitudinal strain correlates with hypertrophy and also the presence of focal fibrosis. Segmental strain is significantly lower in segments where the GEC is greater than that observed in the normal population (r<0.05).