714 Left atrial electrical and mechanical function during dobutamine stress in coronary artery disease.

C. O’Sullivan1, W. Li2, A. Duncan1, C. Daly3, M. Henein1. 1Royal Brompton Hospital, Echocardiography, London, United Kingdom; 2Royal Brompton Hospital, London, United Kingdom

Background: Long standing coronary artery disease (CAD) is frequently complicated by atrial fibrillation, the exact mechanism of which remains to be determined. Aim: To study left atrial (LA) electrical and mechanical function at rest and during dobutamine stress in patients with CAD.

Methods: We studied 33 patients with triple vessel CAD, age 59±9.5 years, 31 males, using conventional dobutamine stress Doppler echocardiography protocol and compared them with 15 controls mean age 58±10 years. LA diameter was measured from the standard aortic root - left atrial echogram. LA longitudinal amplitude of motion and shortening velocity were measured from the M-mode and tissue Doppler imaging (TDI) mitral annulus late ring movement, respectively (taken as the mean of the left, septal and posterior sites). LA ejection velocity was measured from the transmitted pulsed wave Doppler recording in late diastole. PA wave duration and amplitude were measured from V1-V2 on the concurrently recorded 12 lead ECG.

Results: At rest - LA diameter was larger in patients compared to controls 4.3±0.6 vs 3.4±0.3 cm, p<0.001. LA amplitude of motion was increased 7.1±2 vs 5.9±1.2 mm, p=0.001 as was its shortening velocity, p<0.001. LA ejection velocity did not differ between patients and controls. PA wave duration was longer in patients 122±16 vs 105±12 ms, p<0.001 but its amplitude was not different 1.6±0.5 vs 1.8±0.5 mm, NS.

At peak stress: In contrast to controls, LA amplitude of motion failed to increase in patients, 0.66±0.14 cm, NS although the shortening velocity increased by 28% as it did in controls, p<0.001. LA ejection velocity increased equally in patients and controls, p<0.001. PA wave duration fell by 15±2 ms in patients compared to 32±3 ms in controls, p<0.001 and while its amplitude did not change in controls it increased in patients to 2.4±0.7, p<0.001.

Conclusion: Patients with CAD have disturbed atrial electrical and mechanical function at rest. This behavior deteriorates further with stress as manifested by the failure of its amplitude to increase and depolarisation to accelerate. The maintained LA ejection velocities seem to be preserved only at the expense of raised atrial pressure as demonstrated by the voltage increase of PA wave on the surface ECG.

715 Late color M-Mode flow propagation as an index of left atrial function in pts with non-ischemic dilated cardiomyopathy. Effects of Dobutamine.

A.P. Patrianakos1, F.I. Parthenakis1, G.F. Diakakis1, G.P. Tzengakis1, M. Chamilos2, D.C. Kambourakis1, P.E. Vardas2, 1Heraklion University Hospital, Cardiology Dept., Heraklion, Crete, Greece; 2Royaklion University Hospital, Cardiology, Heraklion, Greece

Background: Atrial (ANP) and Brain (BNP) natriuretic peptides are primarily released during atrial contraction and their levels increase in response to atrial stretch and atrial pressure. Dobutamine has been shown to increase ANP and BNP levels in pts with non-ischemic dilated cardiomyopathy (DCM). The aim of the study was a quantitative assessment of late and early atrial flow propagation in DCM.

Methods: We studied 31 DCM patients 52±7 years old (54% men) age 36-80 years, 22 males, who underwent to low-dose Dobutamine echocardiography protocol. Dobutamine provoked silent WMA ratio E/A decreased from 1.05±0.2 to 0.9±0.2, E/A at rest was 0.9±0.2 and its shortening velocity increases by 28% at peak stress. The sample volume was placed in each of 11 segments in which the late (A) diastolic waves and their ratio E/A.

Results: Non-significant changes in heart rate, blood pressure or PA pressure were found at LDDE whereas a trend of increased PA pressure (0.69±0.25 vs 0.53±0.21, p=0.06). The WMSI (2.1±0.24 vs 1.5±0.36, p=0.001) was reduced. ANP (3.7±0.4 vs 3.3±0.2, p=0.02) and BNP (0.77±0.41 vs 0.71±0.39, p=0.01) levels showed also a significant reduction at LDDE. A significant correlation was found between the resting Ep/Ap ratio with resting BNP levels (r=0.59, p<0.01) and S m.v. decreased from 8.3±0.9 to 7.3±1.6 cm/s while the shortening velocity increased by 28% at peak stress. The sample volume was placed in each of 11 segments in which the late (A) diastolic waves and their ratio E/A.

Conclusions: The Ep/Ap ratio is related to BNP levels suggesting that it may be a useful index in assessing LV filling pressures in DCM pts. The relationship of Ap changes to ANP changes at LDDE propose that Ap may depend to LA stretch alterations in those pts.

716 Predictive value of bicycle-echocardiography in stable coronary artery disease.

D. Duplaykov, V. Svetlikova, V. Emelyanenko, S. Golova, E. Suyuenkova. V.A.Z Medical Center, Cardiology, Topilachi, Russian Federation

The aim of the present study was to assess predictive value of bicycle-echocardiography in risk stratification of patients with stable coronary artery disease. Methods. Department's data base was analyzed retrospectively since Jan.1999 till Apr. 2002. Altogether 441 patients (age 36-68 years, mean 53.4±7.2; 91% men) were enrolled in the study. All patients were followed up for minimally 12 moths, and maximally for 42 months (aver. 20±11 months). End points were defined as cardiac death, nonfatal MI and revascularization. Results. In the period of follow-up a total 69 events were observed: 14 deaths, 20 nonfatal MIs and 35 revascularizations. Both groups (event-positive and event-negative) showed no statistical significant baseline difference (age, sex,diabetes,previous MI and revascularization procedures), except hypertension (75.4% vs 53.4%, respectively, p<0.01). At rest echocardiography event-positive patients had statistically higher LV mass index (161±2.5±2.4 g/ml vs 132.8±1.7 g/ml, p<0.02), while there were no difference for other parameters. The prevalence of ST-depression, angina, and wall motion abnormalities during exercise was 36.2%, 68.1%, 85.5% in event-positive group, comparing to 19.1%, 26.1%, 35.6% in event-negative group (p<0.05 for all variables). Achieved mean maximal heart rate and MET were 131±21 bpm vs 143±25 bpm, and 5.9±1.6 vs 7.3±2.5 (p=0.01). The peak LV EDV, ESV and WMSI were 124±27 ml vs 113±39 ml (p=0.01), 58±25 ml vs 47±33 ml (p=ns), 53±12% vs 62±14% (p=0.01) and 1.59±0.3 vs 1.34±0.35 (p=0.02), respectively. Twenty one clinical, echocardiographic and stress-echocardiography variables were analyzed by the Cox proportional hazards regression model, and Kaplan-Meier survival analysis was performed thereafter. Main predictor of subsequent events was positive echocardiographic result. Besides it predictive ability were observed for the whole duration of the test in minutes, LV mass index, MET, angina within the test and history of hypertension. Patients who had negative result of exercise echocardiography were at low risk (3%) of future severe cardiac events (cardiac death and nonfatal MI), whereas positive result was associated with dramatically 5-fold increase of such a risk (15%). Adding revascularization as a surrogate end point we found approximately 7-fold difference between negative (5%) and positive (34%) predictive ability of exercise echocardiography. Conclusion Bicycle-echocardiogram is safe, and effective method in prognostic assessment of ambulatory patients with stable CAD.