Results: Results are reported in the table and expressed as mean ± standard deviation. LV EF significantly improved, while TDI index did not, even if a favourable trend was evidenced.

Conclusions: In patients with unoptimized IV interval at the time of BVP implantation, Tissue Doppler optimization at 6 month follow-up significantly modifies systolic function. The performance of reducing asynchrony by VV delay programming could potentially affect global LV performance.

484 Color Tissue Doppler derived dysynchrony index is associated with left ventricular diastolic restrictive pattern in idiopathic dilated cardiomyopathy

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Purpose: Little is known about the influence of left ventricular (LV) mechanical discoordination on LV filling pressure in end-stage congestive heart failure. This study aimed to evaluate possible association of off-line color Tissue Doppler (TD) derived LV dysynchrony and standard Doppler indexes of LV diastolic function in idiopathic dilated cardiomyopathy (DCM).

Methods: Thirty-nine patients (M/F=27/12, mean age = 54.9 years, 71.8% with left bundle branch block) affected by DCM and 35 sex- and age-matched healthy controls underwent standard Doppler-echo, pulsed TD and off-line color TD (spatial view). All DCM patients had normal coronary angiography. Myocardial early (Em) velocity was measured at LV lateral mitral annulus by pulsed TD and the ratio between transmural E velocity and Em (E/Em ratio) derived as an index of LV end-diastolic pressure. The time to peak (from the onset of EGG QRS complex to myocardial peak systolic velocity) was measured by off-line color TD in 12 LV myocardial segments and middle segments of posterior septum, lateral wall, anterior and posterior walls postero-lateral walls) and dysynchrony index (DI) calculated as the standard deviation of the averaged value.

Results: The 2 groups were comparable for body mass index and heart rate but systolic and diastolic blood pressure were lower (both p<0.01) in DCM. Patients had ejection fraction = 30.5±8.8%, LV end-diastolic dimension = 6.92±1.0 cm, transmural E/Em ratio = 1.4±2.0 and E velocity deceleration time (DT) = 171.6±63.3 ms. DI was 57.6±20.8 in DCM and 16.6±6.2 in controls (p<0.001). E/Em ratio was 10.1±5.6 and 6.2±2.6 respectively (p<0.001). DI was significantly higher in 21 DCM patients with DT >150 ms than in 18 patients with DT ≤150 ms (p<0.05). In ECG groups, DI was significantly associated with Doppler standard transversal DT (r=0.39, p=0.02) and Em/Em ratio (r=0.43, p<0.01). These two associations remained significant even after adjusting for age, heart rate and QRS duration (r=0.45, p=0.008 and r=0.41, p=0.03 respectively).

Conclusions: In DCM LV mechanical discoordination has a negative effect on LV diastolic function. The magnitude of intraventricular dysynchrony is associated with LV diastolic dysfunction (pseudonormal and restrictive patterns), it being parallel to the extent of increase in LV end-diastolic pressure. Intraventricular dysynchrony has to be cautiously quantified when a low ejection fraction is combined with high LV filling pressure, to address patients towards cardiac resynchronization therapy.

485 Tissue Doppler myocardial imaging in assessing impact of permanent short time pacing on global left ventricular myocardial function

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Background and Aim: Tissue Doppler echocardiography (TDE) has been introduced as a quantitative and more objective method for assessing global myocardial function. Chronic right ventricular (RV) pacing in pacemaker patients is associated with development of dilated cardiomyopathy and increased risk of heart failure. The aim of the study is a quantitative assessment of the effects of short time permanent pacing on global myocardial systolic and diastolic functions using pulsed wave TDE.

Method: Eighty-five patients with dual-chamber pacemakers or defibrillators were evaluated. Twenty-five patients (mean age 64±11 years, female with <20% pacing within previous 6 months (16% of VDD mode, 84% of DDDR mode) were included in the study and these were divided into two dimensional echocardiography and TDE performed at baseline. After the atrioventricular delays (AV) were abbreviated to achieve >90% ventricular pacing at an optimal AV interval for 4 hours. After 4 hours long AV delay that achieved >90% sensing was chosen and echocardiography was repeated, Mitral A-wave velocity (E), A'-wave velocity (A'), isovolumetric relaxation time (IRT), isovolumetric contraction time (ICT), and systolic time intervals (Simpson's) were measured. Early (Em) and atrial (Am) Tissue Doppler velocities of the mitral annuli from basal and middle segments of posterior lateral wall, anterior wall and anterior and posterior walls were recorded. Pulmonary venous flow patterns (systolic - Ps, diastolic - Pd, atrial reversal - Pa) were also evaluated. The ratios of E to Em were calculated. Continuous variables are expressed as means ± standard error.

Results: Mitral E (69±1±3 cm/s vs. 67±5±4 cm/s, p = 0.06) was reduced, A' increased (70±9±5 cm/s vs. 73±12±2 cm/s, p = 0.04) and mitral atrial Em/E (5.6±6.0 vs. 5.9±9.5, p = 0.53) was increased after pacing. But there were no statistically significant differences. The EF did not change. Sm, Em, Am were reduced nonsignificantly after pacing. The increase in Pd (44±5±2 cm/s vs. 45±5±0 cm/s, p = 0.29), Pa (29±4±1.4 cm/s vs. 31±5±2.6 cm/s, p = 0.39) flows were not statistically significant.

Conclusion: Short - time pacing seems to have no significant effects on left ventricular systolic and diastolic functions. Further investigations with increased number of patients with different EF and clinical subgroups are needed to evaluate the effects of pacing on left ventricular functions.

486 Tissue Doppler assessment of ventricular asynchrony and cardiac events in patients with LBBB and heart failure

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Purpose: The mechanical consequence of LBBB is an altered ventricular synchrony with an unfavorable effect on global LV performance. Tissue Doppler echocardiography (TDE) has been shown a useful tool to evaluate the mechanical consequences of LV (ECG) QRS complex and has been demonstrated to be a significant predictor of mortality. The aim of the study was to evaluate the prognostic significance of TDE assessed myocardial systolic activation delay of both LV (LV) and right (RV) ventricle in patients with left bundle branch block (LBBB) and clinical signs of heart failure.

Population and methods: 52 patients (mean age 66±13 yrs, 35 males) with complete LBBB (QRS >120 ms) and in NYHA NY class underwent standard Doppler-echo and pulsed TDE. Myocardial activation delay (MAD) from the beginning of Q wave of ECG to the onset of systolic myocardial velocity wave was evaluated in 5 different basal myocardial segments (LV anterior, inferior, septal, lateral walls - RV - lateral wall). Intraventricular activation delay (IntraV-dal) was calculated by the difference of MAD of each LV myocardial segments. Intraventricular activation delay (IntraV-dal) was calculated by the difference of MAD between the most delayed LV segment and RV lateral wall. An index of global ventricular asynchrony (GVA) was obtained by the sum of IntraV dalal and IntraV dalal. Patients were followed for cardiac events such as death, hospitalization (Hospitalization (Hosp), congestive heart failure (CHF) and need of cardiac resynchronization therapy (CRT) were recorded.

Results: The mean value of EF was 40±4±1 and of IntraV dalal and GVA was respectively, 97±4±6, 5±7, 9±4±3, 5±5, 152±5±8, 2±4, 2±4, 2±4, 2±4, 2±4, 4±4, 2±4, 4±4, 2±4. Cox’s proportional hazard multivariate analysis showed that age, GVA and IntraV dalal (HR=1.018, 1.004, 1.001, p=0.05) were independent predictors of mortality. ROC analysis showed that a cut off value of IntraV dalal> 100 msec (AUC= 0.86, p<0.01) predicted mortality, CHF and Hosp with sensitivity and specificity respectively of 81% and 84%, 75% and 70% and 90%.

Conclusion: Intraventricular asynchrony represents a prognostic indicator of major cardiac events at two years follow up in patients with LBBB and HF. Our data could have implications for selecting patients suitable for cardiac resynchronization therapy.