We hypothesized that abnormal renal blood flow from renal artery stenosis can be measured in patients with AMI. In 22 patients (1.8%), the study was interrupted because of failure to visualize LAD (7), PH (7), chest pain (7), hyperpnea (7) and chest radiography during continuous infusion of microbubbles. In 6 patients, DTPA-renogram was performed.

Conclusion: Abnormal renal blood flow can be measured using CEU in patients with renal artery stenosis. CEU may be useful in screening of renal artery stenosis.

1043-48
Feasibility, Symptoms, Adverse Effects and Complications Associated With Noninvasive Assessment of Coronary Flow Velocity Reserve During Interventricular Adenosine Infusion: Experience in 1,222 Patients
Roberta Montisci, Massimo Ruscazzo, Carlo Calais, Norma Zedda, Rosa Manzi, Carlo Caiati, Norma Zedda, Rosa Manzi, Carlo Caiati, Norma Zedda, Rosa Manzi, Carlo Caiati, Norma Zedda, Rosa Manzi, Carlo Caiati, Norma Zedda, Rosa Manzi, Carlo Caiati.
University of Cagliari, Cagliari, Italy.

Background: Noninvasive assessment of coronary flow velocity reserve (CFVR) with contrast-enhanced transonicardiographic contrast echoangiography (CE-TEE) is an increasingly used method to evaluate the effects of eccentric coronary stenosis and coronary microvasculature function. The purpose of this investigation was to analyze and review the Cagliari University experience in assessing CFVR with CE-TEE to define the feasibility, safety, adverse event profile, and complications rate of the test.

Methods: We evaluated CFVR in the left anterior descending coronary artery (LAD) with CE-TEE during adenosine infusion. The pulse wave Doppler of blood flow velocity was measured using CEU in 16 patients (8 males, 49 ± 21 years) with renal artery stenosis. In the remaining 22 patients (1.8%), the study was interrupted because of failure to visualize LAD (7), PH (7), chest pain (7), hyperpnea (7) and chest radiography during continuous infusion of microbubbles. In 6 patients, DTPA-renogram was performed.

Conclusion: Abnormal renal blood flow can be measured using CEU in patients with renal artery stenosis. CEU may be useful in screening of renal artery stenosis.

1043-50
Nicorandil Preserves Collateral Circulation Even at Reduced Systemic Pressure In Comparison With Nitroglycerin: Real-Time Myocardial Contrast Echocardiographic Study
Akiko Iwata, Megumi Watanabe, Ayako Miki, Kentaro Otani, Juri Okazaki, Hideo Hiyama, Tatsunori Yoshida, Yoshio Asakuma, Fumio Nishizaki, Shintaro Beppu, Osaka University, Suita, Japan.

Background: Collateral circulation of microvessel level is important for salvage of the myocardium at risk by coronary obstruction. Real-time myocardial contrast echocardiography (MCE) is useful to evaluate myocardial perfusion quantitatively. However, it has not been elucidated the effect of therapeutic agents on micro-collateral circulation, especially at systemic hypotension.

Purpose: The purpose was to evaluate the effect of nitroglycerin and nicorandil on micro-collateral circulation at systemic hypotension by using real-time MCE.

Methods: Real-time MCE of the left ventricular short axis view was examined by Sequoia 512 (Siemens) during infusions of OptioLox in 15 dogs. After the left circumflex artery was completely occluded followed by bubble destruction using high acoustic power, video intensity (VI) of the risk area during 30 seconds of occlusion was examined. Presence of collateral flow was determined by opacification of the artery during coronary occlusion. The final subjects as having good collateral flow were 8 dogs in which VI at ischemic area was above 15% of VI at non-ischemic area. The VI of the ischemic area was fitted to the exponential function y = A (1 - e^-kt). The value of A x5 (MCE-derived MS) and percent wall thickening (%W) of the ischemic area were calculated, and the flow volume of left anterior descending coronary artery (LAD) and mean systemic blood pressure (mBP) were measured. Dosage of nitroglycerin and nicorandil was determined to make mBP reduce equivalently.

Results: Significant hypotension was induced by each drug (nitroglycerin: 73 ± 10 to 41 ± 8 mmHg, nicorandil: 72 ± 13 to 47 ± 7 mmHg). Nitroglycerin decreased A x5 value at ischemic area significantly (5.8 ± 2.6 to 2.7 ± 1.3, p < 0.05), concomitant with reduction of 5W (9% after baseline vs. 7% in high flow group). Nicorandil increased %W (26% vs. 31% in high flow group) without effective change of MS at ischemic area in spite of systemic hypotension. LAD flow increased from 6.1 ± 2.3 to 9.8 ± 2.1 m/min during nicorandil at hypotension, while it did not change during nitroglycerin.

Conclusion: Nicorandil can preserve coronary flow volume through micro-collateral circulation even at systemic hypotension induced by its vasodilating effect, while nitroglycerin cannot.

POSTER SESSION
1044
New Echocardiographic Approaches to the Evaluation of Cardioomyopathy
Sunday, March 30, 2003, Noon 2:00 p.m.
McCormick Place, Hall A
Presentation Hour: 1:00 p.m.-2:00 p.m.
1044-35
Relationship Between Doppler-Derived Left Ventricular Filling Parameters and Exercise Capacity in Patients With Hypertrophic Cardioomyopathy
Jong-Won Ha, Jae K. Oh, Steve R. Ommen, James B. Seward, A. Jamil Tajik, Mayo Clinic, Rochester, MN.

BACKGROUND: Impaired left ventricular (LV) diastolic function is a prominent feature of hypertrophic cardiomyopathy (HCM). Conventional Doppler indices of LV diastolic function, however, do not correlate with exercise capacity in patients with HCM. Lack of ventricular annular velocity (E) measured using Doppler tissue imaging (DTI) has been reported to be a poor independent index of myocardial relaxation and LV filling pressures can be estimated in HCM by combining mitral inflow (E') and E. The purpose of this study was to determine the relationship between E' and exercise capacity in HCM.

METHODS: Fifteen patients with HCM (male, mean age, 52 ± 14, 13 nonobstructive) underwent supine exercise (E) and two-dimensional and Doppler echocardiographic study at the same time. The mitral inflow velocities were traced and the following parameters were derived: peak velocity of early (E) and late (A) filling and diastolic time (D1). E' velocity was measured at septal corner of mitral annulus by DTI from apical 4-chamber view. Real-time 2D TDI and E' correlated inversely with Ex duration (r = -0.55, p < 0.05). There was a significant positive correlation between E' and Ex duration (r = 0.60, p < 0.05).

However, no correlation was found between conventional Doppler indices and Ex duration.
ABSTRACTS - Noninvasive Imaging 415A

Tissue Doppler Derived Index (E/Es) Correlates With Exercise Capacity in Patients With Hypertrophic Cardiomyopathy

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Background: Abnormal LV diastolic function is proposed to contribute to impaired exercise capacity in hypertrophic cardiomyopathy (HCM). In HCM, the ratio of transmitted early filling (E) to mitral annular tissue Doppler (TD) early relaxation velocities (Ea)/Ea, is the echo parameter that correlates best with invasively measured LV filling pressures.

Objective: To prospectively determine if E/Ea correlates with exercise capacity in HCM.

Methods: Fifty-nine patients (39 male; mean age 47.7 +/- 17.7 yrs) with HCM underwent treadmill stress echo with determination of maximum oxygen consumption (VOP-max). All had mitral inflow and pulmonary venous Doppler, color M-mode and mitral annular TD, immediately before and after exercise.

Results: Traditional indices of LV diastolic function (mitral deceleration time, WA ratio, pulmonary venous S/D ratio, left atrial area) did not demonstrate significant relationships with VOP-max (mean = 21.8 +/- 8.1 ml/Kg/min). LVOT gradient at rest correlated weakly with VO2max (r = 0.13; p = 0.007). By multivariate analysis, the E/Ea ratio, demonstrated the strongest relationship with VO2max (r = -0.7; p < 0.001). VOP-max = 52.2 + 11.8Log (E/Ea); SEE = 1.7 ml/Kg/min). This was independent of resting LVOT gradient.

Conclusions: In HCM, the TD derived index (E/Ea), an estimate of LV filling pressures correlates significantly with VO2-max, independent of LVOT gradient, suggesting that abnormal diastolic function is an important factor limiting exercise capacity.

Reduced Longitudinal Strain Rate in Patients With Cardiac Amyloid Despite Preserved Fractional Shortening Equals That of Dilated Cardiomyopathy

Salvatore P. Costa, Jun Koyama, Flora Sam, Rodney Falk, Boston Medical Center, Boston, MA

Background: A significant difference in strain rate for patients with cardiac amyloid with a history of CHF vs. no history of CHF has previously been observed. However, the extent of this abnormality and its dependence on fractional shortening (FS) is not known. We sought to quantify this abnormality by comparing cardiac amyloid to two groups: patients with severely depressed FS (dilated cardiomyopathy (CMY)) and normal FS; in fact, we found no difference between this group and patients with CMY (non-ischemic) subjects.

Methods: 99 patients with biopsy proven amyloid - 53 patients with no history of CHF and 46 with a history of CHF (of those with CHF, 18 had a FS > 30%, and 28 had a FS < 30%), 14 patients with CMY (non-myocheletic mean FS 20%), and 19 normal subjects were recruited. We previously found that peak systolic strain rate (PSSR) at the basal septum (table). This was true even for patients with cardiac amyloid who had no history of CHF and normal FS. This impairment, in cardiac amyloid even in the absence of CHF and despite normal FS. This impairment,