Patients (n=80)	IL6/Rest	Peak stress	Rec	TF/Rest	Peak stress	Rec
Ischemic (n=45)	2.1 (1.5-2.8)	2.5 (1.7-3.3)*	2.4 (1.6-3.4)*	266 (132-405)	310 (243-553)*	385 (141-577)*
Non ischemic (n=35)	2.1 (1.3-3.2)	2.1 (1.4-3.5)	2.2 (1.4-3.6)	371 (142-576)	312 (210-590)	328 (265-600)

*p<0.01 stress and recovery vs rest

1092-29 **Quantitative Dobutamine Stress Echocardiography Based on a New Automatic Analysis Algorithm for Tissue Doppler Data**

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The main limitation of dobutamine stress echocardiography (DSE) is its subjective interpretation. Tissue Doppler imaging (TDI) has been used with promising results for quantitative analysis. However, it requires extensive time consuming analysis.
We analysed a new analysis algorithm which allows acquisition of TDI data in the background of the 2D image during DSE and subsequent instantaneous automatic analysis of TDI information.
Methods: In 30 consecutive patients undergoing coronary angiography DSE was performed with color TDI data being acquired in the background. An analysis algorithm was used which allows automatic comparison of obtained peak systolic tissue velocities with expected "normal" peak systolic tissue velocities and subsequent color coding of areas reaching the normal value. Image quality of the 2D image with simultaneous acquisition of TDI data was compared with image quality of mere 2D image acquisition on a three grade score (1: worst to 3: best).
Results: Image quality of 2D images with simultaneous acquisition of TDI data was non-significantly impaired compared to mere 2D image acquisition (2.68±0.37 vs 2.74±0.36, respectively, p=n.s.). There was agreement between DSE test result based on visual evaluation of 2D images and DSE test result based on color coded automatic analysis of quantitative TDI data in 87% of patients (kappa= 0.58). Accuracy of DSE for detection of coronary artery disease defined by coronary angiography with analysis of TDI in addition to 2D images was 83 % vs. 78% for analysis of 2D images alone (p=n.s.).**Conclusion:** Simultaneous acquisition of TDI and 2D data is highly feasible as it allows rapid acquisition of TDI data without a substantial loss in 2D image quality. Automatic analysis of TDI data allows rapid quantitative analysis of regional myocardial function at peak stress. It increases the security on the accurate interpretation of DSE test results.

1092-30 **Multiscale Motion Mapping (Triple-M Imaging) for Color-Coded Analysis of Stress Echocardiograms**

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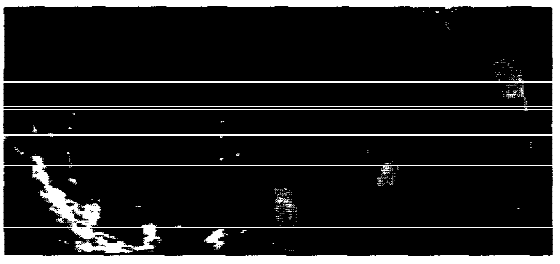
Background: Echocardiographic evaluation of coronary heart disease mainly depends on subjective analysis of multiple ultrasound loops at rest and stress. Although suited for quantitative measurement, the use of tissue Doppler and border detection algorithms remains limited for various reasons.
Methods: Multiscale Motion Mapping ("Triple-M Imaging") is a novel imaging modality for measurement of motion in echocardiograms. In opposite to tissue Doppler or endocardial border detection algorithms the use of all available greyscale information yields quantitative motion maps which are neither angle dependent nor limited to endocardial visibility.
To test the feasibility of detecting abnormal motion in stress echo, echo data from various stress states in experimental myocardial infarction in an animal model (6 mongrel dogs) were analysed in noninfarcted and infarcted segments.
Results: There was 100% agreement of infarcted versus noninfarcted segments and a-/dyskinesis versus normal contractility in multiscale motion mapping (chi-square test: p<0.001)
Conclusion: In an in vivo model of myocardial infarction, Multiscale Motion Mapping, a novel image analysis technology, allowed reliable, user-independent classification of normal and abnormal segments in stress echocardiograms. The availability of this automatic analysis method for stress echo, which is independent from Doppler and border detection, thus promises to render stress echo more objective and quantitative.



1092-45 **Cardiac Troponin I Release After Dobutamine Stress Echocardiography in Patients With Coronary Artery Disease**

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Background : dobutamine stress echocardiography (DSE) is a widespread diagnostic tool for noninvasive testing of patients with known or suspected coronary artery disease. Whether release of cardiac troponin (c TnI), a very sensitive myocardial marker of myocardial damage, could be observed after DSE remains controversial.
Methods : We studied 53 patients (mean age 63 ± 13 years, male 40) who underwent DSE because of : chest pain 25 (47 %), planned vascular surgery 5 (9,5 %) or, evaluation after an acute coronary syndrom 23 (43,5 %). Dobutamine was given up to 40 µg/kg/min ± atropine up to 1 mg. Thirty-four (64 %)of patients were on beta-blockers therapy. c TnI was measured at baseline, and then 8 and 24 hours after DSE completion.
All patients underwent coronary angiography. Clinical decisions regarding coronary interventions were taken by physician blinded to the results of marker determination.
Results : c TnI release was observed in 22 (42 %) of patients. No pretest variables predicted marker elevation. No patients with normal or non significant coronary artery disease had marker elevation. Marker release was associated with : a greater or equal than 50 % diameter stenosis of at least one major epicardial coronary artery (p = 0,001), test interruption because of an ischemic event (p = 0,05) development or worsening of wall motion abnormalities (p = 0,001), the need for a revascularisation procedure (p = 0,02).
Conclusions : c TnI release is frequently observed following DSE in patients with coronary artery disease. Its routine measurement may improve accuracy of the test. Patients with c TnI elevation after DSE are more likely to undergo a coronary revascularisation procedure.

1092-46 **Myocardial Viability Predicts Long-Term Survival for Patients With Severe Left Ventricular Dysfunction**

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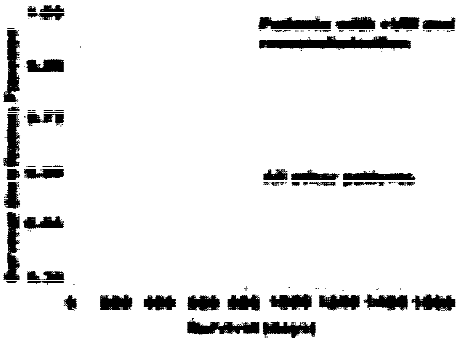
Background: Although several studies have validate the use of dobutamine stress echocardiography (DSE) for identification of viable myocardium (VM) in patients with moderate LV dysfunction, none have specifically considered the long-term prognostic value of VM in patients with markedly severe LV dysfunction.
Methods: We analyzed 108 patients (mean age 62.8±10.5 years) with CAD and severe LV dysfunction (EF≤25%; mean 21%) who underwent DSE. Patients were considered to have VM if at least 25% of LV myocardium demonstrated improvement, deterioration or a biphasic response. We generated Kaplan-Meier curves and performed Cox regression analysis to identify predictors of mortality.
Results: Of 108 patients, 83 (77%) had VM. Within 30 days of DSE, 63 patients (51 with VM) underwent revascularization (52 CABG, 11 PCI). With follow-up of 27±19 months, there were 36 deaths (17 with revascularization, 21 with medicine). Patients with VM who underwent revascularization had a survival advantage over other patients (p = 0.001). In the Cox regression model, VM predicted survival (hazard ratio 0.321, p = 0.002) independent of EF, diabetes and revascularization.
Conclusion: In patients with severe LV dysfunction, VM demonstrated by DSE is an important independent long-term prognostic factor. While use of VM to guide therapy must be prospectively validated, VM may help identify patients with severe LV dysfunction that benefit most from revascularization.



1092-47 **Transthoracic Coronary Doppler Detects Severe Left Anterior Descending Coronary Artery Stenosis**

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Objectives. Aim of this study was to detect severe (≥90%) left anterior descending coronary artery (LAD) stenosis by transthoracic coronary Doppler, an emerging method to noninvasively measure coronary flow reserve (CFR). **Background.** Severe LAD stenosis carries a high risk of acute coronary events, but cannot be reliably predicted by symptoms or standard noninvasive tools. Experimental work shows that CFR measured by Doppler ultrasound is damped (<1) in severe stenosis. **Methods.** Peak diastolic flow velocity in the LAD was measured by transthoracic Doppler echocardiography at baseline and during 90 sec venous adenosine infusion (140 mcg/kg/min). CFR (ratio between hyperemic and basal coronary flow velocity) was measured in 314 subjects, stable and without previous anterior myocardial infarction, 3.7±2 days before coronary angiography.