**Regional Wall Motion Abnormalities During Dobutamine Stress Echocardiography in Patients With Systemic Sclerosis**

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**Background:** Systemic sclerosis (SSc) is a chronic connective tissue disorder of unknown etiology, characterized by cutaneous and visceral involvement. The pathogenesis of the cardiac lesion in SSc is controversial, but the primary disorder of microvasculature with diffuse arteriolar and capillary lesions could precede any fibrosis, thus causing ischemic disorder to the heart. Dobutamine stress echocardiography (DSE) is a sensitive indicator of coronary artery disease. This study was performed to assess the value of DSE results in diagnosis of cardiac involvement in patients with SSc without clinical evidence of heart disease and to determine if abnormal responses to dobutamine can be explained by a decreased coronary flow velocity reserve (CFVR).

**Methods:** We studied 27 patients with SSc without clinical evidence of heart disease, 15 with diffuse form and 12 with localized form of SSc, age 54±12. All patients underwent high dose DSE testing (5-40 mcg/kg/min) and evaluation of CFVR in the left anterior descending coronary artery with contrast transthoracic Doppler during adenosine infusion (140 µg/kg/min in 5 minutes). Patients were divided into two groups based on the absence (group A; n=15) or presence (group B; n=12) of regional wall motion abnormalities (RWMA) on DSE.

**Results:** 13 of 28 pts (46%) with SSc, we found RWMA during DSE with patchy distribution. Both groups showed normal CFVR values (group A, 2.76±0.7; group B, 2.26±0.4), but CFVR in group B was statistically reduced compared to group A (p=0.03).

**Conclusion:** This study showed that many patients with SSc, without clinical evidence of heart disease, can have indiscernible RWMA during DSE with patchy distribution. Furthermore, CFVR reduction suggests the role of a partial coronary microvascular dysfunction in these group of patients.

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**Distal Left Anterior Descending Flow Reserve by Dobutamine Versus Adenosine Transthoracic Doppler Echo During Conventional Dobutamine Echocardiography: Feasibility and Accuracy for Left Anterior Descending Patency**

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**Background:** There are a few data for coronary flow reserve (CFR) post dobutamine (D)dilution. We aimed to evaluate the diagnostic accuracy for significant LAD stenosis using CFR either during DSE or post adenosine (AD)dilution.

**Patients-Methods:** We studied 101 consecutive pts (age 59±9, 17 women) with known or suspected CAD who were referred for DSE.

**CVR was estimated:**
1. at the stage of 30mg/kg/min of DSE (CVRdib)
2. 30 minutes post DSE after adenosine (CFRaden).

All pts underwent coronary angiography within a period <3months.

**Results:**
1. Distal LAD flow was detected in all 101 pts (feasibility 100%). In 4101 pts, contrast had to be used. Distribution of LAD stenosis was as follows: 70%: 21 pts (12 with >90% stenosis).
2. ROC analysis for prediction of LAD % diameter stenosis gave the following results:

<table>
<thead>
<tr>
<th>LAD’s stenosis</th>
<th>CFR</th>
<th>Cut off</th>
<th>Sens</th>
<th>Spec</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50</td>
<td>aden</td>
<td>1.82</td>
<td>0.51</td>
<td>0.98</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>&gt;50</td>
<td>dob</td>
<td>1.3</td>
<td>0.80</td>
<td>0.96</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>&gt;70</td>
<td>aden</td>
<td>1.8</td>
<td>0.92</td>
<td>0.94</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>&gt;70</td>
<td>dob</td>
<td>1.3</td>
<td>0.52</td>
<td>0.84</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**CVR values for both Aden and Dob were related with % LAD diameter stenosis with cube function:**

\[
\text{CVR adenosine} = -4.7 \times (\text{LAD})^3 + 0.0056 \times (\text{LAD})^2 + 0.034 \times (\text{LAD}) + 3.2 \quad (F=34.5, p<0.00001) \\
\text{CVR dobutamine} = -0.000063 \times (\text{LAD})^3 + 0.0087 \times (\text{LAD})^2 - 0.0378 \times (\text{LAD}) + 2.2 \quad (F=12, p<0.00001) \\
\]

**Conclusion:**
1. High-resolution ultrasound enhances feasibility of LAD CFR
2. CFR by AD has excellent accuracy for LAD stenosis interrogation.
3. CFR evaluated at DSE has lower values than CFR by adenosine. However, CFR estimated during DSE has great specificity to exclude significant LAD stenosis.

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**Assessment of Myocardial Viability in Patients With Myocardial Infarction: Comparison of Contrast-Enhanced Magnetic Resonance Imaging With Dobutamine Stress Echocardiography**

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**Background:** Contrast-enhanced magnetic resonance image (CE-MRI) has been shown to identify necrotic tissue in ischemically damaged myocardium. Low-dose dobutamine stress echocardiography (LDSE) is used for assessment of myocardial viability. Objective: We sought to compare CE-MRI with LDSE for assessment of myocardial viability in patients with myocardial infarction. Methods: Fifty-two patients with acute myocardial infarction underwent CE-MRI and LDSE. All patients treated with angioplasty and had transmural extent of hyperenhancement by delayed CE-MRI. LDSE was performed with high-dose DSE testing (5-40 mcg/kg/min) to identify necrotic tissue in ischemically damaged myocardium. Results: CE-MRI accurately predicted non-viable myocardium, with a sensitivity and specificity of 82% (95% confidence interval [CI]: 70% to 93%) and 85% (95% CI: 77% to 93%), respectively. Conclusions: CE-MRI and LDSE allow accurate assessment of myocardial viability in patients with myocardial infarction. CE-MRI has a higher sensitivity and specificity than LDSE. LDSE can be used as an alternative method for assessment of myocardial viability.}

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**Incremental Value of Transient Poststress Left Ventricular Dysfunction After Dobutamine-Atropine Stress Echocardiography**

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**Background:** Dobutamine stress echocardiography (DSE) is an established technique for the diagnosis of coronary artery disease (CAD). Ischemia is defined by regional reduction of myocardial thickening or inward motion of endocardial borders. However, the evaluation of DSE is subjective and experience dependent and would be improved by additional objective parameters. The aim of the study was to test the additional role of volumetric ejection fraction (EF) differences in the assessment of myocardial viability.

**Methods:** The study includes 100 consecutive patients with suspected or known CAD (mean age 61±11 years; 73% males) referred for DSE: 50 patients with and 50 without stress-induced ischemia assessed by new wall motion abnormalities, using a 16-segment, 5-point score. All cardiac risk factors and hemodynamics during DSE were noted. Ventricular volumes were measured using the Simpson’s method at the main DSE stages (rest, low dose, peak, and recovery).

**Results:** In 50 patients with documented ischemia male gender, angina pectoris were more frequent (p < 0.001). No differences were noted between the two groups in respect.