sponses (biphasic and scar with ischemia) were predictive of adverse outcome. Revascularization may improve outcome in these patients. In conclusion, ischemia, rather than scar, by DSE predicts adverse outcome in patients with chronic left ventricular dysfunction.

4:30

812-3 Extent of Nonviable Myocardium by Dobutamine Echocardiography Predicts Death in Ischemic Cardiomyopathy

William V. Novak, Stephen G. Sawada, Stephen J. Lewis, Judy Foltz, Patricia Brenneman, John R. Bates, Douglas S. Segar, Harvey Feigenbaum. *Indiana University, Indianapolis, IN*

Dobutamine Echocardiography (DE) has been shown to be useful for distinguishing viable from nonviable myocardium, but the value of DE for predicting prognosis in ischemic cardiomyopathy (CADCM) is unknown. Fifty-three patients (pts) with CADCM underwent low (10 mcg/kg/min) and peak-dose DE. Left ventricular wall motion was assessed using a 16 segment model and Wall Motion Score (WMS) indices were calculated for each pt. Akinetic segments that did not improve with Dobutamine were considered nonviable. In an average of 21 months of follow-up, 13 of the 53 (25%) pts had cardiac deaths. In those who died, an average of 50 ± 24% of segments were nonviable. In the remaining 40 pts, an average of 25 ± 17% of segments were nonviable ($p \leq 0.001$). Deaths occurred in 13 of 39 (33%) pts with ≥ 3 nonviable segments and in none of the 14 (0%) pts with < 3 nonviable segments ($p = 0.012$). A low-dose WMS index ≥ 1.9 had 100% sensitivity (13 of 13 pts) and 35% positive predictive value (13 of 37 pts) for identifying pts with cardiac death. A low-dose WMS index < 1.9 had a negative predictive value of 100% (16 of 16 pts).

Conclusions: 1) In this study, pts with CADCM who died had twice the extent of nonviable myocardium by DE as those who lived. 2) Pts at high risk for cardiac death were identified by ≥ 3 nonviable segments or a low-dose WMS index ≥ 1.9. 3) Pts at low risk for cardiac death were identified by < 3 nonviable segments or a low-dose WMS index < 1.9.

4:45

812-4 Prognostic Significance of Low-Dose Dobutamine Test in Patients With Advanced Congestive Heart Failure Due to Dilated Cardiomyopathy

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Indices of systolic cardiac performance at rest provide limited prognostic information in patients (pts) with advanced congestive heart failure due to dilated cardiomyopathy. To evaluate the prognostic significance of the response to inotropic stimulation, 77 pts with congestive heart failure and dilated cardiomyopathy (46 ischemic and 26 non-ischemic) underwent simultaneous right heart catheterization and 2D echocardiography at baseline and during low-dose (10 γ/kg/min) dobutamine (DOB) infusion. Thermodilution cardiac index (CI) and cardiac power output (W) were measured by right catheterization. From 2D-echocardiography left ventricular ejection fraction (EF) and a semiquantitative wall motion score index (WMSI) were calculated. *Results:* during a mean follow-up of 17 ± 9 months, 27 pts died.

	CI (l/m/m2)		W (watts)		EF (%)		WMSI	
	Rest	DOB	Rest	DOB	Rest	DOB	Rest	DOB
Survivors (50 pts)	2.2±0.5	3.2±0.6 *	0.9±0.3	1.2±0.4 **	24±6	33±10 **	2.6±0.2	2±0.2 *
Non-survivors (27 pts)	2.0±0.5	2.8±6	0.8±0.3	0.9±0.3	23±7	27±8	2.9±0.3	2.8±0.5

*p < 0.05, **p < 0.02

Conclusions: In pts with advanced congestive heart failure due to dilated cardiomyopathy, low-dose DOB test shows that non-survivors during a mid-term follow-up have similar systolic function at rest but lower contractile reserve than survivors.

813 Exercise Physiology and Testing III

Wednesday, March 27, 1996, 4:00 p.m.–5:00 p.m.
Orange County Convention Center, Room 224B

4:00

813-1 Are Stress Imaging Modalities of Value in Post-Myocardial Infarction Predischarge Risk Stratification? A Meta-Analysis of Stress Perfusion and Ventricular Function Imaging Studies

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Specialized post-myocardial infarction (MI) predischarge testing includes exercise (EX) or pharmacologic stress (Pharm) perfusion (MPI), radionuclide angiography (RNA), or echocardiography. To examine the predictive value of imaging modalities post-MI for cardiac death (D) or MI, we reviewed MEDLINE from 1980 to 1994; producing 13 MPI (EX = 8, Pharm = 5), 6 Echo (EX = 2, Pharm = 4) and 8 EX RNA reports on 4,350 patients (mean age:56 years;85% male) tested 1.2–2.8 weeks post-MI. Overall D or MI rates at 1.5 years ranged from 8% to 23%.

	D or MI Rates by Test Result		Summary Odds Ratio (95% C.I.)
	Abnormal, %(n)	Normal, %(n)	
EX Perfusion			
Reversible Defect	15.8%(417)	5.1%(335)	3.6(1.2, 12.6)
Multiple Defects	16.7%(36)	2.0%(99)	3.3(1.2, 11.1)
Pharm Perfusion			
Reversible Defect	19.5%(154)	9.1%(132)	1.8(0.8, 4.1)
Multiple Defects	16.7%(12)	10.0%(20)	1.8(0.8, 11.8)
EX RNA			
Ejection Fraction ≤ 40%	31.0%(29)	9.1%(66)	4.4(1.7, 14.0)
Ejection Fraction Δ ≤ 5%	18.2%(99)	6.2%(243)	3.6(1.3, 9.9)
New Dyssynergy	17.1%(82)	5.6%(71)	2.7(1.2, 6.4)
EX Echocardiography			
Ejection Fraction δ ≤ 5%	62.5%(16)	7.8%(51)	9.1(2.2, 37.7)
New Dyssynergy	48.5%(33)	13.5%(74)	8.6(2.7, 27.6)
Pharm Echocardiography			
New Dyssynergy	8.4%(191)	6.0%(216)	1.7(0.7, 4.0)

Conclusions: The value of exercise MPI and RNA results are clear, but available data are less promising for pharmacologic stress testing, emphasizing the need for larger, well-controlled studies.

4:15

813-2 Exercise Versus Dobutamine Echocardiography in Patients With Chronic Coronary Artery Disease

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To compare the extent of ischaemia precipitated by digital exercise (EE) and dobutamine echocardiography (DE) in chronic stable coronary artery disease (CAD), 39 consecutive patients (pts) able to exercise underwent EE and DE on the same day. Twenty-one pts had 1 vessel disease (1VD), 10 2VD and 8 3VD. Twenty-two pts were treated with b-blockers which were discontinued in 11 before the tests. EE was performed on a modified Bruce protocol and DE with increasing doses of dobutamine (5–40 mcg/kg/min) and the addition of atropine if the 85% of the maximal predicted heart rate (HR) was not achieved. The tests were assessed using the total ischaemic score index in an 11 segment protocol. The walls were scored as: 1 = normokinetic, 2 = hypokinetic, 3 = akinetic and 4 = dyskinetic. The table shows the maximal blood pressure (BP), maximal HR and heart rate blood pressure product (RPP) for both tests:

	BP (max)	HR (max)	RPP
EE	169.6 ± 30.2	140.5 ± 21.5	23861.6 ± 6303.1
DE	132.7 ± 23.1	145.9 ± 18.8	19241.6 ± 4249.6
p	0.0001	NS	0.0001

There was a greater number of positive tests with EE than with DE (69% vs 56%, p = NS). The maximal ischaemic score index was greater during EE than with DE (1.65 ± 0.38 vs 1.44 ± 0.4, p = 0.01) in the 22 pts with both tests positive. Thus, EE precipitates a greater magnitude of ischaemia than DE in chronic CAD pts perhaps due to the greater workload posed on the heart by the increased BP.