

Conclusions: In a heterogeneous population referred for chest pain, DASS provides useful, independent prognostic information, according to the imaging pattern and extent and severity of perfusion abnormalities.

914-97 Prediction of Severe Coronary Artery Disease With Tc-99m Sestamibi Perfusion and Function Studies: A Comparison With Clinical History, Physical Examination, and Electrocardiographic Data

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Simultaneous perfusion and function studies were obtained in 167 patients with cardiac catheterization \leq 90 days; 76% were men, mean age 60 years. Multivariable logistic regression analysis was used to identify independent predictors of the 54 patients with severe, multivessel coronary artery disease. Composite clinical history, physical examination, and rest electrocardiographic variables were combined in the form of a clinical index for creating baseline risk adjustment. Multivariable logistic regression modeling was performed including important univariable predictors ($p < 0.20$) of multivessel coronary artery disease with exercise electrocardiographic, perfusion, and function variables. The final model included:

Multivariable Model	Coefficient (s.e.)	chi ²	p value
Peak Ejection Fraction \leq 50%	-0.06 (0.02)	7.8	0.005
Number Reversible defects	0.42 (0.21)	4.3	0.039
Number of defects	0.55 (0.28)	3.8	0.05
ST depression (millimeters)	0.89 (0.26)	11.8	0.0006
Clinical History Index	0.60 (0.17)	122	< 0.001

Conclusion: Simultaneous myocardial perfusion and function studies with Tc-99m sestamibi are able to improve prediction of the extent of coronary disease, even when clinical history and electrocardiographic data are also available.

914-98 Prognostic Value of Resting Thallium-201 Imaging: Measurement of Infarction but Not Ischemia Predicts Outcome

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The purpose of this study was to examine the prognostic value of resting thallium-201 scintigraphy. Two hundred fifty-one patients (178 M, 73 F, age 66 \pm 10 years) who underwent resting tomographic thallium-201 imaging were followed for a median duration of 25 months. There were 54 initial cardiac deaths or myocardial infarctions and 97 total deaths. Thallium uptake was graded on early and 4 to 6 hour delayed images by 2 experienced observers in 14 short axis segments using a 5-point scale. Five variables were analyzed for association with outcome: extent of redistribution, extent and severity of redistribution, extent of DEFECT DELAYED, extent and severity of DEFECT DELAYED, and increased lung uptake. Results of the Cox univariate analysis for the endpoint cardiac death or myocardial infarction were:

Variable	χ^2	p
Extent of redistribution	< 1	NS
Extent and severity of redistribution	< 1	NS
Extent of DEFECT DELAYED	4.3	0.04
Extent and severity of DEFECT DELAYED	5.2	0.02
Increased lung uptake	5.1	0.02

In the Cox multivariate analysis, the only variable independently associated with outcome was extent and severity of DEFECT DELAYED. In the subset of 88 patients who additionally underwent 24 hour delayed imaging, neither extent of redistribution nor extent and severity of redistribution was predictive of outcome. For the endpoint total mortality, the only variable associated with outcome was the extent and severity of DEFECT DELAYED (univariate $\chi^2 = 4.1, p = 0.04$).

Conclusion: Measurement of DEFECT DELAYED ("infarction") but not measurement of redistribution (resting ischemia) predicts outcome in patients undergoing resting thallium imaging.

914-99 Is ST Segment Depression During Pharmacologic Stress Testing a Predictor of Events?

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The relationship between ST depression during pharmacologically-induced

coronary hyperemia and prognosis may differ from that during exercise. This study examined the relation between ST depression during adenosine-SPECT thallium imaging and prognosis in 233 patients (pts) with angiographic evidence of coronary artery disease (CAD, \geq 50% diameter stenosis of 1 or more vessels). During a mean follow-up of 31 \pm 20 months there were 32 events (cardiac death or nonfatal myocardial infarction). ST segment depression was present in 38 pts and absent in 195 pts. There were 27 events in pts with no ST depression (14%) and 5 events in pts with ST depression (13%, P:NS). Actuarial life table analysis showed no difference in event-free survival in pts with and without ST depression. By multivariate Cox survival analysis the important predictor of events was the size of perfusion abnormality ($P < 0.05$). The 5 pts with ST depression and events differed from the pts with ST depression and no events in the number of vessels diseased (2.1 \pm 0.7 vs 3.0 \pm 0.1, $P = 0.01$). Thus, ST depression during adenosine SPECT thallium imaging in pts with documented CAD is not a risk factor of events. This may be due to the dual role of collaterals in relation to ST depression and cardioprotection.

914-100 Are Hemodynamic Changes During Adenosine Infusion Predictive of the Diagnostic Accuracy of Adenosine Sestamibi SPECT?

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Whether adenosine myocardial perfusion SPECT remains accurate for detecting CAD in the absence of peripheral hemodynamic changes is controversial. To assess the hemodynamic correlates of perfusion defects, we studied 222 consecutive patients (age 71 \pm 11 years) without prior MI or revascularization who underwent dual isotope myocardial perfusion SPECT (DIMPS) (rest Tl-201/adenosine sestamibi) and catheterization \leq 6 months of DIMPS. Visual analysis used 20 SPECT segments and a 5 point scoring system (0 = normal, 4 = absent uptake). The SPECT study was considered abnormal if \geq 2 segments had a stress score of \geq 2 or \geq 1 segment had a stress score of \geq 3. The overall sensitivity, specificity and accuracy of adenosine DIMPS for detecting CAD (\geq 50% stenosis) were 94% (173/183), 74% (29/39) and 91% (202/222), respectively. The diagnostic value of DIMPS based on hemodynamic changes (heart rate = HR; systolic blood pressure = SBP) were as follows:

Patient category	Sensitivity	Specificity	Accuracy
HR \uparrow \leq 10bpm	95% (107/112)	68% (15/22)	91% (122/134)
HR \uparrow > 10 bpm	93% (66/71)	82% (14/17)	93% (82/88)
SBP \downarrow \leq 10 mmHg	94% (63/67)	75% (9/12)	91% (72/79)
SBP \downarrow > 10 mmHg	95% (110/116)	74% (20/27)	91% (130/143)
HR \uparrow \leq 10bpm and SBP \downarrow \leq 10 mmHg	94% (45/48)	57% (4/7)	89% (49/55)
HR \uparrow > 10 bpm or SBP \downarrow > 10 mmHg	95% (128/135)	78% (25/32)	92% (153/167)

p = ns between each category.

The prevalence of left main or multivessel CAD and extent of scan abnormality were similar among all groups. Thus, the diagnostic accuracy of adenosine DIMPS is high even in patients without hemodynamic evidence of adenosine effect.

915 Basic Coronary Vascular Physiology/Studies During Ischemia

Monday, March 25, 1996, Noon-2:00 p.m.
Orange County Convention Center, Hall E
Presentation Hour: Noon-1:00 p.m.

915-84 Loss of Nitric Oxide Synthase Activity in the Post-Ischemic Heart: Evidence for Acidosis Induced Enzyme Denaturation

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Endothelium-dependent vasodilation is impaired during ischemia and reperfusion, and this may be due to altered nitric oxide (NO) generation from nitric oxide synthase (NOS). However, the time course of NOS activity alterations within ischemic and reperfused myocardium and the contribution of ischemia and reperfusion-induced pH changes to these alterations are not known. Therefore, NOS activity and myocardial pH were measured in isolated rat hearts subjected to 30 to 180 min of global 37^o C ischemia or ischemia followed by 45 min reperfusion, using a new sensitive and specific assay of arginine conversion to citrulline with partial purification of the enzyme, and ³¹P NMR, respectively. While NOS activity was largely unchanged during the first 30 min of ischemia a subsequent large progressive decrease occurred