

sensitive in the elderly (83%, 25/30 vs 59%, 43/73 in younger patients, $p = 0.03$).

In conclusion, multiple wall motion abnormalities during DASE are very specific for multivessel CAD after acute MI irrespective of age, but are only sensitive in the elderly. These data imply that a target HR of 120 is adequate to detect multivessel CAD in the elderly, but higher peak stress may be needed in younger patients.

1129 Nuclear Cardiology: Fluorodeoxyglucose SPECT and Tetrofosmin

Tuesday, March 31, 1998, Noon-2:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: Noon-1:00 p.m.

1129-143 Prediction of Improvement of Left Ventricular Function and Heart Failure Symptoms by FDG SPECT

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Background: Previous studies have reported on the prediction of recovery of the LV ejection fraction (LVEF) after revascularization. It is uncertain whether this improvement of LVEF is associated with improvement of heart failure (HF) symptoms. In the present study we have focused on the prediction of LVEF and improvement of HF symptoms with FDG SPECT in patients ($n = 32$) with ischemic cardiomyopathy (mean LVEF $28 \pm 8\%$) undergoing revascularization.

Methods: Patients underwent FDG SPECT (to assess glucose utilization), early thallium-201 SPECT (to assess perfusion) and resting echocardiography (to assess contractile status). All techniques were analyzed using a 13-segment model. Dysfunctional segments showing either normal perfusion or hypoperfusion with increased FDG uptake were considered viable. LVEF was assessed before and 3 months after revascularization by echocardiography/radionuclide ventriculography. The patients were divided into 2 groups: group I consisted of 18 patients with ≥ 3 dysfunctional but viable segments on FDG SPECT and group II consisted of 14 patients with < 3 viable, dysfunctional segments.

Results: In group I the LVEF improved significantly from $26 \pm 17\%$ to $34 \pm 8\%$ ($P < 0.05$), while in group II the LVEF remained unchanged ($30 \pm 7\%$ vs $30 \pm 8\%$). In group I the HF status improved significantly from (2.9 ± 0.3 to 1.5 ± 0.5 , $P < 0.05$), while in group II the HF status remained unchanged (2.6 ± 0.4 vs 2.4 ± 0.5).

Conclusion: The results demonstrate that FDG SPECT can identify patients who improve in LVEF and HF status after revascularization.

1129-144 Differentiating Viability Criteria on F18-Fluorodeoxyglucose Imaging for the Optimal Prediction of Functional Recovery After Revascularization

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Background: The F18-Fluorodeoxyglucose (FDG)-perfusion mismatch pattern is predictive for functional recovery after revascularization, whereas the FDG-perfusion match predicts no recovery. Other studies have used a mild reduction of FDG and perfusion ("mild match") as criterium for viability. Whether this criterium predicts functional recovery is unclear. This study aimed to compare the predictive value for functional recovery of these different viability criteria.

Methods: Patients ($n = 42$) referred for revascularization were studied with early resting thallium-201 SPECT (to evaluate perfusion) and FDG SPECT. Contractile function was evaluated before and 3 months after revascularization using 2D echocardiography. Two hundred and six dysynergic segments were identified; functional recovery occurred in 71 segments. The segments were divided in 5 groups: 1) segments with normal perfusion, 2) segments with a mild reduction in perfusion ($\geq 60\%$ of normal TI-201 uptake) without increased FDG uptake (viable without mismatch), 3) segments with a mild reduction in perfusion and increased FDG uptake (mismatch pattern), 4) segments with a more severe reduction in perfusion ($< 60\%$ of normal TI-201 uptake) without increased FDG uptake (match pattern) and 5) segments with a TI-201 activity $< 60\%$ and increased FDG uptake (mismatch pattern).

Results: Group 1, 3 and 5 had a positive predictive value of 76%, 69% and 68%, resp. Group 2 and 4 had a negative predictive value of 87% and 93%.

Conclusion: Thus, normal perfusion and mismatch patterns are predictive of functional recovery, while the match pattern (either mild or severe) is predictive of absence of recovery.

1129-145 Can Recovery of Ventricular Function After Elective Early Postinfarction Revascularization of Asymptomatic Patients Be Predicted by Perfusion/Metabolism SPECT Radionuclide Imaging or Dobutamine Echocardiography?

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Background: Perfusion/metabolism radionuclide imaging with Tc^{99m} Sestamibi (M) and F-18 Fluoro-Deoxy-Glucose (F), and low-dose dobutamine echo (L-DE, $10 \mu\text{g}/\text{kg}/\text{min}$) have been shown to predict LV functional recovery in patients with hibernating myocardium and chronic LV dysfunction. We evaluated their value in assessing myocardial viability in asymptomatic patients post-infarction (MI).

Methods: 31 consecutive asymptomatic patients after a Q-wave MI were followed for 2 months. The protocol included rest MF imaging, baseline rest echo and L-DE within 3-5 days post-MI. All patients had elective revascularization < 7 days of the MI, and rest echo at 2-months post-MI. We used a 16-segment LV model and blinded, independent analysis for all tests. Functional recovery was defined as improved segmental LV thickening at follow-up vs. baseline echo. Viability was defined as improved segmental LV thickening on L-DE vs. baseline echo, or M and/or F uptake $> 50\%$ compared to maximum.

Results: $n =$ number of infarcted segments.

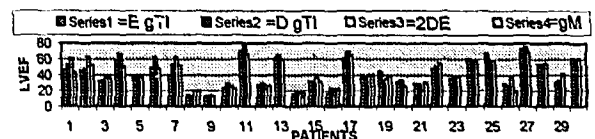
	L-DE $n = 162$	M - 50% $n = 133$	F - 50% $n = 143$	F > 50% or F > M $n = 143$
Sensitivity	56%	69%	61%	71%
Specificity	86%	42%	46%	40%
Pos Pred Value	60%	38%	37%	38%
Neg Pred Value	84%	73%	69%	73%

Conclusion: In asymptomatic early post-MI patients, L-DE had higher specificity and MF higher sensitivity for detection of LV recovery after revascularization. F imaging was not incremental to the M derived viability. Too low a dose of DE and possibly defective myocardial glucose metabolism early post-MI may account for the limited benefit of these studies in detecting myocardial viability in the studied clinical setting.

1129-146 Two Dimensional Echocardiography (2DE) and Gated SPECT MIBI in Evaluation of LVEF: A Comparison With Gated SPECT TI-201 Chloride

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We aimed to correlate the LVEF calculated from early (E) and delayed (D) gated Thallium (gTI) SPECT myocardial perfusion imaging with that obtained by Two Dimensional Echocardiography (2DE) and resting gated MIBI (gMIBI) SPECT imaging. 30 patients (pts) (19 M and 11 F), range 40 to 82 years (mean 60.4) with at least 3 myocardial ischemic risk factors were studied. Pts received 2.8-3.2 mCi of TI-201 at peak exercise, and a 16-20 mins gated SPECT study was obtained at 15 mins and 3 hours after injection, using ADAC dual head gamma camera Vertex MCD version. The LVEF was automatically calculated using Germano method. 2DE was performed same day using Acuson XP10 Ultrasound Unit with LVEF calculated using modified Simpson's rule with manual edge detection. The following day 15 of the 30 pts had 16-20 mins gMIBI SPECT study 1 hour following injection of 13-15 mCi. Same parameters were used to calculate LVEF as in the TI studies. In 30 pts who had gTI study, LVEF range was 13-73% from E gTI (mean 41.2%), 13-80% from D gTI (mean 43.4%), and 14-67% from 2DE (mean 43.2%). Correlation between E & D gTI was 0.95, E gTI & 2DE was 0.90, and D gTI & 2DE was 0.91. In 15 pts who had gMIBI study, LVEF range was 15-48% from E gTI (mean 31.8%), 13-53% from D gTI (mean 33.5%), 15-63% from 2DE (mean 36.4%), and 17-52% from gMIBI (mean 33.2%). Correlation between E & D gTI was 0.89, E gTI & 2DE was 0.86, E gTI & gMIBI was 0.90, D gTI & 2DE was 0.92, D gTI & gMIBI was 0.92, and 2DE & gMIBI was 0.88.



We concluded that gated TI SPECT studies are useful for calculation of LVEF. All imaging modalities had excellent correlation.