No. 774
IDENTIFICATION OF HIGH-RISK CORONARY ARTERY DISEASE WITH REST AND EXERCISE DUAL-ISOTOPE SPECT.
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Background: Extensive perfusion defects (PD), transient ischemic dilatation (TID), and increased (T) RV activity each indicate severe (SEV) coronary artery disease (CAD) on exercise SPECT imaging. The relative frequency of these features was examined in patients (pts) with and without high risk CAD. Methods: Rest 201Tl and exercise 99mTc (sestamibi or tetrofosmin) SPECT images were analyzed for TID (i.e., 99mTc/201Tl inverted cavity counts > 1.19), PD pattern indicating left main or 3- vessel CAD, and peak RV/LV activity ratio in 215 pts: 56 with SEV CAD (left main or 3-vessel), 144 with 1- or 2-vessel CAD (MILD), and 75 with no significant (NOSIG) CAD on angiography or a low likelihood of CAD. Results: TID was common in the SEV group (78%, vs. 65% in MILD, 24% in NOSIG group, each p < 0.05). An RV/LV ratio (stress peak RV/LV count ratio > 2.7% and stress RV/LV ratio > 1.2) was present in 33% of SEV, 6% of MILD, and 5% of NOSIG (p < 0.01 SEV vs. other groups). The PD pattern indicated SEV CAD in 33% of SEV, 28% of the mild group, and 16% of the NOSIG group (p < 0.02, SEV vs. NOSIG). Marked (i.e., > 3 mm) ST- depression with angina pectoris was rare (5%) in NOSIG, but did not distinguish SEV from MILD. Conclusions: SEV CAD is suggested by the presence of angina plus marked ST-depression, a multivessel pattern of PD, RV activity with exercise, and TID with dual-isotope SPECT. TID is more frequent than RV activity in such pts; the latter is more specific for SEV CAD, e.g., a right left main or less proximal right CAD.

Anginal ST-dep increased RV Severe PD TID

No Significant CAD Mild CAD High Risk CAD

No. 775
EVALUATION OF THE NEW GENERATOR-PRODUCED PET RADIOPHARMACEUTICAL C62-ETS VERSUS C62-PTSM FOR MYOCARDIAL PERFUSION IMAGING. J. L. Lacy*, N. G. Haynes, N. Nayak, C. S. Martin, D. Dai, M. A. Green, Proportional Technologies, Inc., Houston, TX; Purdue University, West Lafayette, IN. (101274)

Aims: Although C62-PTSM has been shown to provide high quality PET myocardial perfusion images, liver uptake is relatively high, and myocardial uptake is nonlinear with flow. The goal of this work was to determine whether the PET agent C62-ETS, a related bromo(thiophenecarboxone) tracer which is produced by the Lo52C62 generator, demonstrates superior imaging characteristics when compared to generator-produced C62-PTSM for myocardial perfusion imaging. Methods: 7 normal volunteers and 1 CAD patient, who had all previously undergone PET myocardial perfusion imaging with PTSM, received rest-dipyridamole stress PET scans using the ETS agent following the same protocol in both cases. Mean injected doses were 19.5 ± 2.0 mCi and 18.3 ± 2.4 mCi for C62-PTSM and C62-ETS, respectively. Comparable doses were injected for rest and stress studies, which were separated by a 45-minute period to allow decay. Images were processed and displayed in short axis format, and regions of interest were drawn around the myocardium and the liver. Results: The stress/rest myocardial ratio for ETS was 1.54 ± 0.15 vs 1.36 ± 0.17 for PTSM (p < 0.05). The heart/liver ratio at rest for ETS was 1.04 ± 0.08 vs 0.70 ± 0.18 for PTSM (p < 0.05). At stress, the heart/liver ratio was 1.07 ± 0.11 and 0.63 ± 0.13 for ETS and PTSM, respectively (p < 0.05). Conclusions: The new agent C62-ETS exhibits a significantly higher stress/rest myocardial ratio and much lower liver uptake levels compared to C62-PTSM. Therefore, this tracer, whose performance is similar to N3 ammonia and which can be generator-produced and widely distributed, merits further investigational studies.

No. 776
DETERMINATION OF LEFT VENTRICULAR EJECTION FRACTION BY ADVANCED ECHO IMAGING MODALITIES IMPROVES CORRELATION WITH RADIONUCLEIDE ANGIOGRAPHY. E. H. Yu*, R. M. Iwanochko, R. Burke, C. Sleggett, H. Ratowsky, S. Sian, R. I. Burns, The Toronto Hospital, Western Division, Toronto, ON, Canada; University of Toronto, Toronto, ON, Canada; The Toronto Hospital, Toronto, ON, Canada. (101344)

Correlation of LV ejection fraction (LVEF) by echocardiography (echo) and radionuclide angiography (RNA) is poor. This is especially evident when the echo endocardial border definition (EBD) is poor. Intravenous (IV) contrast and tissue harmonic imaging (THI) are 2 methods for enhancing EBD. We prospectively studied 35 consecutive patients (20 male, mean age 54 yr) referred for RNA because of a poor quality echo. Mean RNA was 1.91 ± 0.27. Standard echo views were obtained using fundamental imaging (FI) and LV contrast (Levovist®) enhanced power harmonic imaging (CON). LVEF was calculated using Simpson's biplane formula (SBF) for each echo. All patients underwent equilibration ECG-gated RNA (32-frames/RX) within 1 hour of echo. Independent blinded observers calculated LVEF obtained by FI, THI, and RNA. ECHO LVEF's obtained by FI, THI, and CON were compared to RNA using linear regression. The range of differences between RNA and each echo method was determined. Correlation coefficients were calculated. Results: Images for the calculation of LVEF using SBF are feasible in 100%, 80%, and 40% by CON, THI, and FI respectively (p < 0.001 for all pairwise comparisons). CON LVEF has the best correlation with RNA LVEF. Conclusions: CON provides adequate EBD for reliable calculation of LVEF.

Linear Regression of LVEF (RNA vs. Echo)

<table>
<thead>
<tr>
<th>Modality</th>
<th>SEE</th>
<th>r</th>
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<tbody>
<tr>
<td>FI</td>
<td>0.5</td>
<td>0.94</td>
<td>[4/10 to +9]</td>
</tr>
<tr>
<td>THI</td>
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<td>0.97</td>
<td>[11 to +7]</td>
</tr>
<tr>
<td>CON</td>
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No. 777
QUANTITATIVE REST TC-99M TETROFOSMIN TOMOGRAPHY IN PREDICTING FUNCTIONAL RECOVERY AFTER REVASCULARIZATION: COMPARISON WITH DOBUTAMINE ECHOCARDIOGRAPHY. A. Cuocolo*, W. Acampa, A. Bruno, M. Castellani, V. Longari, L. Spinelli, University Federico II, Napoli, Italy; IRCSS-Ospedale Maggiore, Milano, Italy. (500050)

Objectives: Myocardial perfusion imaging and low-dose dobutamine echocardiography have been used to identify viable myocardium in patients with ischemic left ventricular (LV) dysfunction. This study was designed to assess the comparative values of rest Tc-99m tetrofosmin cardiac tomography and dobutamine echocardiography for predicting recovery of LV function after revascularization. Methods: Seventeen patients with previous myocardial infarction and impaired LV function (ejection fraction 34 ± 9%) underwent on the same day low-dose (5-10 mg/kg/min) dobutamine echocardiography and rest tetrofosmin imaging. Resting echocardiogram and tetrofosmin tomography were repeated 3 months after revascularization. In each patient, tetrofosmin activity was quantitatively measured in 16 segments. LV function was assessed in corresponding segments. Baseline akinesia or dyskinesia segments < 10% were considered as showing functional recovery when wall motion improved after revascularization. Optimal threshold cutoff to separate reversible from non-reversible dysfunction was determined by receiver operating characteristic analysis. Results: Of the 77 segments with severe wall motion abnormalities (akinetie or dyskinetic) at baseline echocardiography, 30 showed functional recovery and 7 showed no change after revascularization. In asynergic segments with functional recovery, tetrofosmin uptake was 53 ± 10% at baseline and 60 ± 15% after revascularization (p < 0.001). In asynergic