The following papers were inadvertently left out of Abstract Book. We apologize for the oversight.

CARDIOVASCULAR/CLINICAL

Posterboard 759

ALTERATIONS IN LEFT VENTRICULAR FATTY ACID CLEARANCE IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION. CL Hansen, DR Corbett, P Kulkarni, V Ugolini, DE Jansen, JJ Pippin, G Henderson, LM Buja, RW Parkey, and JT Willerson. Departments of Medicine, Pathology, and Radiology, University of Texas Health Science Center, Dallas, TX.

Iodine-123 phenylpentadecanoic acid (IPPA) is a synthetic, radiolabeled single photon emitting fatty acid suitable for myocardial imaging. The current study was undertaken to test the hypothesis that myocardial imaging using IPPA and single photon emission computed tomography (SPECT) would reveal abnormalities of IPPA uptake and/or clearance in regions of acute myocardial infarction. Nine volunteers (nls) (27 ± 2 yrs) and 13 patients (pts) (55 ± 10 yrs) with recent documented myocardial infarctions (MI) (7 ± 5 days post-MI) were studied at rest with SPECT imaging 9 and 40 minutes following the administration of 6-8 mCi of IPPA. Left ventricular regions of decreased IPPA uptake greater than 2 standard deviations from the mean of nls were demonstrated in 12/13 pts. These abnormalities correlated with the EKG localization of MI. IPPA uptake in infarcted regions was significantly decreased when compared to noninfarcted left ventricle (LV) (48 ± 11% vs. 89 ± 5%, $p < 0.001$). Infarcted LV regions also demonstrated decreased clearance of IPPA when compared to nls (4 ± 6% vs. 17 ± 5%, $p < 0.001$). Noninfarcted LV showed increased clearance of IPPA compared to nls (29 ± 7% vs. 17 ± 5%, $p < 0.001$). We conclude that when compared to nls, pts with MI demonstrate 1) decreased uptake of IPPA in infarcted regions, 2) decreased clearance of IPPA in infarcted regions, and 3) increased clearance of IPPA in noninfarcted regions of the LV.

Posterboard 759.1

THE MYOCARDIAL IMAGING CHARACTERISTICS OF I-123 METAIODOBENZYLGUANIDINE IN PATIENTS WITH CONGESTIVE CARDIOMYOPATHY AND NORMALS. EB Henderson, DE Jansen, JT Willerson, JJ Pippin, V Ugolini, PM Kulkarni, CL Hansen, and DR Corbett, University of Texas Health Science Center, Dallas, TX.

I-123 metaiodobenzylguanidine (MIBG), a norepinephrine analog, has been used to evaluate myocardial catecholamine uptake and retention. To test the hypothesis that abnormalities of myocardial catecholamine distribution can be demonstrated in patients (pts) with congestive cardiomyopathy (CCM), we used single photon emission computed tomographic imaging (SPECT) with MIBG in 12 pts with CCM (mean left ventricular ejection fraction = 0.21 ± 07) and 9 normals (nls).

MIBG uptake was reduced in the CCM pts (86.9 ± 41 mean counts/voxel/mCi injected dose (cpv) vs. 134.9 ± 31 cpv in the nls, $p = 0.008$). The heterogeneity of MIBG distribution was also significantly greater in CCM pts:

	% Variation Within Image					
	Sagittal		Apical		Basal	
CCM	49 ± 17%	p<0.001	36 ± 15%	p<0.001	45 ± 15%	p<0.001
Nls	18 ± 08%		14 ± 05%		21 ± 05%	

Finally, there was diminished myocardial retention (increased washout) of MIBG between acute and 2 hour images in the CCM pts:

	% Washout					
	Sagittal		Apical		Basal	
CCM	30 ± 13%	p<0.001	27 ± 14%	p=0.003	28 ± 13%	p=0.002
Nls	08 ± 08%		09 ± 08%		10 ± 08%	

Thus, there was less MIBG uptake, a more heterogeneous pattern of uptake, and diminished myocardial retention of MIBG in the CCM pts. We conclude that SPECT imaging with I-123 MIBG may be a useful noninvasive method for identifying myocardial abnormalities of adrenergic innervation and catecholamine distribution in pts with CCM.

Posterboard 759.2

SINGLE PHOTON EMISSION COMPUTED TOMOGRAPHY UTILIZING I-123 PHENYLPENTADECANOIC ACID TO ASSESS MYOCARDIAL FATTY ACID METABOLISM BEFORE AND AFTER PERCUTANEOUS TRANSLUMINAL CORONARY ANGIOPLASTY. JJ Pippin, DE Jansen, EB Henderson, JR Corbett, E van den Berg, J Schmitz, G Dehmer, PV Kulkarni, LM Buja, RW Parkey, and JT Willerson, UTHSC, Dallas, TX.

Cardiac single photon emission computed tomography (SPECT) with I-123 phenylpentadecanoic acid (IPPA), a radiolabeled synthetic fatty acid (FA), allows the evaluation of segmental myocardial FA metabolism in pts with coronary artery stenoses. The hypotheses tested were that treadmill exercise testing (ETT) utilizing SPECT with IPPA 1) detects abnormalities of FA metabolism associated with severely stenosed coronary arteries and 2) accurately reflects the angiographic success of PTCA. IPPA imaging was performed in 14 men after exercise (mean age 54 yrs; range 37-66 yrs), before and after successful PTCA. Pre-PTCA thallium-201 (Tl-201) ETT with SPECT was performed in 10 pts. IPPA and Tl-201 pre-PTCA showed no significant differences for detecting abnormal cases (12/14 vs 8/10) and abnormal PTCA vessels (13/15 vs 8/11). Alterations in LV segmental IPPA uptake and clearance were detected, and reversible abnormalities (RA) were noted in all abnormal cases.

	Exercise Duration	Abnormal ETT	RA on IPPA Pts	RA on IPPA Vessels
Pre-PTCA	357 ± 102 sec	10/14	12/14	13/15
Post-PTCA	450 ± 59 sec	2/14	2/14	2/15
p	-0.012	-0.006	<0.001	<0.001

Thus, 1) SPECT imaging with IPPA is a useful non-invasive technique for evaluation of metabolic abnormalities occurring with coronary artery stenoses, 2) IPPA is at least equivalent to Tl-201 for this purpose, and 3) post-PTCA IPPA imaging correlates well with successful PTCA as defined by angiography and ETT.

COMPUTERS AND DATA ANALYSIS

Posterboard 759.3

AUTOMATED 3-D ANALYSIS OF TOMOGRAPHIC RADIONUCLIDE VENTRICULOGRAMS: VALIDATION USING Gd-153 ENDOCARDIAL SURFACE MARKERS. TL Faber, EM Stokely, GD Templeton, RW Parkey, JT Willerson, JR Corbett, UTHSC, Dallas, TX.

Gated tomographic radionuclide ventriculograms (TRVG) allow 3-d assessments of left ventricular (LV) volumes and segmental ventricular function. In this study, we tested the hypothesis that automated determination of global LV volume (V) and endocardial surface locations (ES) are possible using TRVG and SPECT imaging.

Methods were previously developed for the automated quantification and display of local and global LV V and wall motion using TRVG. A phantom study was performed using LV-shaped flasks suspended in a water-filled cylinder to validate global LV V. Experimental flask V were determined and compared to actual flask V. Actual and experimental flask V correlated with r=.99; the regression equation was y=1.0x+1.5ml.

To validate regional edge detection, 6 Gd-153 markers, 1mm in diameter, were implanted on the LV ES of 5 mongrel dogs. Gated SPECT studies were acquired to locate markers through the cardiac cycle. TRVGs were

acquired immediately thereafter using Tc-99m labelled red blood cells. The ES was determined using the automated method. The average distance of the TRVG ES points from the markers was x=1.9+1.5mm (SD).

Global LV stroke volume (SV) was calculated experimentally from the TRVG studies and compared to SV computed from thermodilution cardiac output measurements. Experimental SV compared to actual SV with the regression equation y=.80x-.33ml, r=.95.

We conclude from this study that global LV V and ES locations can be accurately determined with automated analysis of TRVGs.

Scientific Exhibits

BONE/JOINT

Posterboard 823

REPRODUCIBILITY OF SPINE BONE MINERAL MEASUREMENTS BY DUAL PHOTON ABSORPTIOMETRY (DPA) DEMONSTRATING OPTIMUM REGION OF INTEREST. W.L. Dunn, E. Ardila, H.W. Wahner, Mayo Clinic, Rochester, MN.

This study investigates lumbar spine DPA measurement reproducibility in order to determine the optimum measurement quantity (or units) and region of interest (ROI).

Five patients received two spine scans on the Lunar Radiation, Inc. DP3. The second scan was performed after repositioning the patient. Scanning speed of 2.5 mm/sec, the 8 mm detector collimator and 4.5 mm line spacing were used.

The following 8 quantities which appear on the Lunar printout were evaluated for 10 different regions of interest.

Quantity	Units
1. Bone Mineral Content (BMC)	g
2. Area of ROI	cm^2
3. Bone Mineral Areal Density (BMD)	g/cm^2
4. Average vertebral width (W)	cm
5. BMC/W	g/cm
6. Central Density-BMD of 1 cm wide strip	g/cm^2
7. Corpus Density-estimated vertebral body density	mg/cm^3
8. Trabecular Density	mg/cm^3

The mean percent difference between the two measurements was determined for each measurement parameter listed above. This was calculated for individual and combinations of vertebrae from L1 through L4. Optimum regions of interest with respect to reproducibility for BMD were L1-4 and L2-4 yielding 1.4% and 1.7% respectively for mean differences. We see little clinical application for the other quantities.