

INHIBITION OF LEUKOCYTE MIGRATION BY MONONUCLEAR CELL SUPERNATANTS FROM PATIENTS WITH ISCHEMIC HEART DISEASE.
 Sunil K. Das, M.D.; Leonard D. Stein, M.D.; Russell T. Reynolds, M.S.; Paulette J. Thebert, B.S.; James T. Cassidy, M.D., Departments of Medicine and Pediatrics, University of Michigan, Ann Arbor, MI.

Although Immunologic abnormalities have been observed in patients with various forms of ischemic heart disease (IHD), their clinical significance remain unknown. The present study examined in-vitro correlates of cell-mediated immunity (CMI) in 12 patients with unstable angina (UA); 5 with stable angina (SA); 12 with myocardial infarction (MI), 9 with MI < 1 year, 3 with MI > 1 year; and 12 control subjects (C). The indirect agarose leukocyte migration inhibition factor test was performed with the culture supernatants from peripheral blood mononuclear cells exposed to human heart extracts (HE) and concanavalin A (con A). Leukocyte migration inhibition (LMI) was present in response to HE for 6 of 12 (50%) patients with UA, 3 of 5 (60%) with SA, 5 of 12 (42%) with MI, and 1 of 12 (8%) of C. Migration indices ($\bar{X} \pm SD$) for these groups were measured at 0.9 ± 0.16 for UA, 0.88 ± 0.14 for SA, 0.9 ± 0.17 for MI, and 0.97 ± 0.1 for C ($P < 0.05$ between test groups and C). All patient groups had normal con A stimulated LMI. Thus LMI in response to HE stimulation provides additional evidence of altered immune response in patients with IHD probably related to previous or on-going myocardial damage.

ACCELERATED CORONARY ATHEROSCLEROSIS FOLLOWING CARDIAC TRANSPLANTATION: SIGNIFICANCE OF HYPERCHOLESTEROLEMIA
 M.L. Hess, M.D., Andrea Hastillo, M.D., FACC, T.C. Wolfgang, MD, R.R. Lower, MD, Medical College of Virginia, Richmond, VA.

The significance of hypercholesterolemia in the development of accelerated atherosclerosis in patients following cardiac transplantation (CT) is unknown. To possibly identify those CT patients at increased risk for the development of accelerated coronary artery disease (CAD), total cholesterol (C), high density lipoprotein cholesterol (HDL) and the ratio of C/HDL were longitudinally followed in 15 long term survivors (>3 mos) of CT and correlated with graft function. Indications for CT: recurrent myocardial infarction (MI, n=7) and cardiomyopathy (CM, n=8). Preoperative C did not differ in the two groups (MI=201 + 37; CM=151 + 14 mg%, $p > 0.2$) but HDL was lower in the MI group (29 + 2.7 vs 46 + 5.9 mg%, $p < 0.05$) and R was greater (7.3 + 1.3 vs 3.5 + 0.3, $p < 0.05$). At one year post CT, both C and R were greater in the MI group (C: 350 + 43 vs 221 + 16 mg%, $p < 0.05$; R: 6.8 + 1.1 vs 3.8 + 0.08, $p < 0.05$). At two years post CT, C and R remained elevated in the MI group (C: 330 + 29 vs 220 + 11, $p < 0.01$; R: 7.8 + 0.8 vs 3.8 + 0.8, $p < 0.001$) and HDL was significantly decreased in the MI group (42.7 + 2.0 vs 59.2 + 6.0 mg%, $p < 0.05$). All patients in the MI group and only one patient in the CM group developed either abnormal exercise thallium studies (segmental perfusion defects), gated pool scans (regional wall motion abnormalities) or myocardial infarction. It is concluded that the accelerated atherosclerosis of CT is associated with an increase in C and C/HDL ratio, that by two years post CT, patients with elevated C and R values demonstrate graft dysfunction with evidence of CAD and that patients transplanted for recurrent MI may be at increased risk for the development of accelerated CAD.

WEDNESDAY, MARCH 18, 1981

**AM
 ECHOCARDIOGRAPHY: VENTRICULAR FUNCTION I
 8:30-10:00**

TWO-DIMENSIONAL ECHOCARDIOGRAPHIC MEASUREMENT OF EJECTION FRACTION: WHAT DETERMINES A GOOD CORRELATION?

R. Brad Stamm, MD; Douglas L. Mayers, MD; Randolph P. Martin, MD, University of Virginia, Charlottesville, Va.

An estimate of left ventricular ejection fraction (EF) is often used. We performed two-dimensional echocardiography (2DE) on 45 patients 24 hours prior to ventriculography (LVG) to assess a) whether trained echocardiographers could accurately estimate EF, b) which measured 2DE formula correlated best with LVG, and, c) to determine if the quality of the 2DE study affected the EF. Three blinded readers estimated EF using all standard 2DE views. Additionally calculated area, diameter and length was measured from parasternal short axis and apical views. 2DE quality was graded good and poor. Correlation with LVG follows:

	All patients N = 45		Patients Measured		Good Quality Studies Only		Poor Quality Studies Only	
	N	r	N	r	N	r	N	r
Estimated	45	.93	20	.94	25	.91		
Simpsons	21	.93	16	.93	5	.84		
Ellip Biplane 4	35	.85	16	.84	19	.91		
Ellip Biplane 2	13	.91	11	.92	too few			
Ellip Uniplane 4	42	.87	20	.92	22	.80		
Ellip Uniplane 2	17	.86	12	.90	5	.43		
Short Ellipse	36	.87	20	.95	16	.74		
Apical Diameters	17	.81	13	.89	too few			
Teicholz	36	.74	20	.76	16	.77		
Length Estimate	34	.80	20	.83	14	.78		

$p=0.01$ for all r

We conclude that a highly accurate 2DE estimate of EF can be made by trained observers; the estimated EF was obtained in all patients and was not affected by echo quality. The biplane echo formulas are the most accurate but they are adversely affected by echo quality and cannot be obtained in all patients.

HETEROGENEITY OF SEGMENTAL LEFT VENTRICULAR WALL THICKENING AND EXCURSION IN TWO-DIMENSIONAL ECHOCARDIOGRAMS OF NORMAL HUMANS. Natesa Pandian, MD; David Skorton, MD; Steve Collins, PhD; Ed Burke, PhD; Herman Falsetti, MD, FACC; Richard Kerber, MD, FACC, CV Cent, Univ of Iowa, Iowa City, Iowa.

Segmental abnormalities of left ventricular (LV) wall thickening and excursion have been demonstrated by 2-D echo (2DE) in ischemic heart disease, but the variability of segmental dynamics in normals has not been defined. We performed 2DE on 12 normal male subjects, age 19-27. Short-axis images at mitral valve (MV), chordal (CH) and papillary muscle (PM) levels were obtained at end-diastole and end-systole. Radii were drawn dividing each image into 12 equal segments. 420 segments were analyzed. % systolic wall thickening along each radius, and % area change of each cavity segment were determined, using a computerized analysis which corrected for cardiac rotation and translation. Variability was measured as the range of thickening or segmental area change % (highest-to-lowest) for each subject at each level. Average range for all subjects at each level is expressed as "mean range". Results: We saw greater than 15% cavity area change and greater than 20% systolic thickening in 95% of all segments analyzed.

Level	Wall Thickening (%)			Cavity Segment Area Change(%)		
	Mean	S.D.	Mean Range	Mean	S.D.	Mean Range
MV	53	27	76	44	16	32
CH	50	23	61	47	21	53
PM	53	23	64	52	20	43

Correction for cardiac rotation and translational motion within the thorax did not alter these results. Conclusions: 1) There is considerable intersegmental variability of LV dynamics in normals on 2DE. 2) Marked differences in thickening and wall excursion may occur in adjacent segments in normals, and therefore such differences alone do not indicate ischemic heart disease.