ventricular end-systolic volume index (LVESVI) and left ventricular end-diastolic volume index (LVEDVI).

In this sub-study, 381 patients were enrolled between May 2000 and July 2005 in eight countries, 195 to percutaneous coronary intervention plus optimal medical therapy (PCI), and 186 to optimal medical therapy alone (MED). The participants were similar in baseline characteristics except for a history of diabetes which was more frequent in MED (25 % vs. 16% in PCI). The arterial occlusion at baseline was 99% in PCI and 100% in MED. The majority of patients in both groups (>80%) took beta-blockers, ace inhibitors, and statins during the trial.

After one year, patency was significantly greater in the PCI group (83% vs. 25%, respectively; p<0.0001). More surprising was the finding that the LVEF significantly improved in both groups, with no statistically significant difference between the two treatment arms (p=0.47). "Assignment to PCI was not predictive of improvement in LVEF" said Dr. Dzavík. There was, however, a trend favoring PCI in the secondary measures of volume (LVESVI percent change p=0.07, LVEDVI percent change p=0.09), especially when LAD was the infarct-related artery. The investigators have therefore concluded that PCI establishes and sustains coronary artery patency but does not result in improved LVEF. One explanation is that although the epicardial artery is opened during PCI, the downstream microvasculature remains obstructed. It is also possible that the follow-up period was not long enough to illustrate a benefit of PCI, so the investigators plan to continue following the patients for a longer period of time. The results of the TOSCA-2 study were published online on November 14, 2006 in *Circulation* (www.circulationaha.org; DOI 10.1161 CIRCULATIONAHA.106.669432).

Are Open Arteries Beneficial in Late Reperfusion? Results of the OAT Trial

Judith S. Hochman, MD

Photo courtesy of the American Heart Association

The Occluded Artery Trial (OAT) was presented by study chair Judith S. Hochman, MD, on behalf of all investigators. This large multicenter trial was conducted at 217 sites around the world in 27 countries. There is no question that early reperfusion enhances left ventricular function and survival in patients with ST-segment elevation myocardial infarction (STEMI). This trial, however, set out to answer the question of whether or not late reperfusion would reduce by 25% the occurrence of a composite endpoint of death, reinfarction, or heart failure (NYHA class IV). The investigators hypothesized that opening arteries later (3 to 28 days post-MI) would decrease adverse remodeling, increase the electrical stability of the heart, and increase collateral development.

This trial was designed to study stable patients, therefore those with shock, rest or low threshold angina, class III-IV congestive heart failure, significant left main or 3 vessel coronary artery disease, hemodynamic/electrical instability or a creatinine level greater than 2.5 mg/dL were excluded. Patients had to have a proximal occlusion or an ejection fraction less than 50% to participate in the study. Eligible patients were randomized to one of two treatment arms: percutaneous coronary intervention with stenting and optimal medical therapy (PCI group) or optimal medical therapy alone (MED). A total of 2,166 of patients were randomized from 2000 to 2005, 1,082 in the

PCI group and 1,084 in the MED group. The trial lost very few patients to follow-up (0.7% in PCI and 1.1% in MED).

The trial results were somewhat unexpected. There was no difference between the two groups in death, reinfarction, or heart failure (hazard ratio (HR) 1.16 [95% CI, 0.92 – 1.45]; p=0.20). The rates of these primary events were 17.2% in the PCI group and 15.6% in the MED group. "The rate of severe heart failure was much lower than we projected", commented Dr. Hochman. In terms of nonfatal myocardial reinfarction, an increase in risk was seen in the PCI group (6.9%) versus the MED group (5.0%), with an HR of 1.44 ([95% CI, 0.96 – 2.26]; p=0.08). The investigators conducted additional subgroup analysis to determine if any other factors were related to the increase in risk. No significant differences were found when subgroups such as age, gender, race, ethnicity, ejection fraction, presence of diabetes, Killip class, the artery where the infarction occurred, or the time from MI to randomization were analyzed.

Four-year cumulative event rates in OAT

Outcome	PCI (%)	Medical (%)	HR	95% CI	p
Death, MI, HF	17.2	15.6	1.16	0.92-1.45	0.20
All MI	7.0	5.3	1.36	0.92-2.00	0.13
Nonfatal MI	6.9	5.0	1.44	0.96-2.16	0.08
NYHA Class 4 HF	4.4	4.5	0.98	0.64-1.49	0.92
Death	9.1	9.4	1.03	0.77-1.40	0.83

What does this mean for clinicians? Aggressive medical intervention without revascularization may be an appropriate approach for patients that have a profile similar to the OAT population. The results of the OAT trial were published online on November 13, 2006 in the *New England Journal of Medicine* (www.nejm.org; Hochman et al; DOI 10.1056/NEJMoa066139**).** Economic and quality of life trial results will be reported separately.

Effects of Carperitide and Nicorandil on Injury and Function in Patients with Acute MI: Results of the J-WIND Trial

Masafumi Kitakaze, MD, PhD, Department of Internal Medicine and Therapeutics, Osaka University Graduate School of Medicine, presented the results of the Japanese Working Groups of Acute Myocardial Infarction for the Reduction of Necrotic Damage by Atrial Natriuretic Peptide (ANP) or Nicorandil (J-WIND) trials conducted in Japan from 2001-2006. Carperitide, human recombinant ANP, is approved for the treatment of acute heart failure in Japan. Nicorandil, a nicotinamide nitrate that activates potassium channels in the heart, is used to treat chronic angina. These randomized, double-blind studies evaluated intervention with either carperitide or nicorandil on infarct size, left ventricular function, and associated outcomes.

The study population was patients experiencing their first heart attack. In one trial, patients were given either carperitide (0.025 mcg/kg/min for 3 days) or a 5% glucose solution as a placebo. In the second trial, patients were administered nicorandil (0.067 mg/kg bolus plus 1.67 mcg/kg/min for 24 hours) or a placebo saline infusion. The size of the infarct was determined by measuring the area under the curve (AUC) of creatinine kinase (CK). Chronic left ventricular function (LVEF) was evaluated via ventriculography.

There were no significant differences in demographics of the groups of patients in either trial. The carperitide trial randomized 569 patients, 277 to active treatment and 292 to placebo. Patients were followed for an average of 2.7 years. The CK AUC was 14.7% lower in patients treated with carperitide (p=0.016), and chronic LVEF was 5.1% higher than the control group (p=0.024). The