cardiac arrest [Bernard SA et al. *N Engl J Med* 2002]. According to Dr. Geocadin, this therapy provides hope, and the practice of early prognostication that leads to withdrawal of life support needs to be reevaluated. When the results of both hypothermia studies were pooled, the number needed to treat (n=6) was the same as for tissue plasminogen activator (TPA) in acute ischemic stroke, suggesting to Dr. Geocadin that just as the use of TPA resulted in the creation of stroke centers, a similar type of center may be warranted for cardiac arrest.

Imaging in the Management of Acute Chest Pain

In this session, presenters debated the merits of echocardiography, nuclear imaging, computed tomography (CT), and cardiac magnetic resonance (MR) in the management of patients with chest pain and suspected acute coronary syndrome (ACS).

"Echocardiography is a bedside technique and is eminently suited for risk-stratifying patients with suspected ACS," said Roxy Senior, MD, Northwick Park Hospital, Middlesex, UK. He described the benefits of different options for echocardiography. Resting echocardiography with normal function virtually excludes high-risk patients, whereas perfusion with echocardiography provides important incremental information, he said.

For patients with normal resting echocardiography but with significant risk factors, stress echocardiography improves evaluation and is feasible in the emergency department. In a trial of 147 patients who presented with acute chest pain and negative troponin levels, stress myocardial contrast echocardiography (MCE) was superior to Thrombolysis In Myocardial Infarction (TIMI) risk score and exercise electrocardiography in the assessment of risk among patients with a nondiagnostic electrocardiogram. Cardiac events in patients with abnormal MCE findings (59%) were significantly higher than those that were predicted by a high-risk TIMI score (33%; p=0.0023) and compared with those that were predicted by high-risk exercise electrocardiography (80% vs 57%; p=0.0003) [Jeetley P et al. *Am J Cardiol* 2007].

James E. Udelson, MD, Tufts Medical Center, Boston, MA, argued in favor of nuclear imaging for the management of suspected ACS. In particular, single-photon emission computed tomography myocardial perfusion imaging (SPECT MPI) requires a simple protocol that most clinicians can perform. The test provides rapid results, and widespread quality assurance tools are available to ensure that test results are accurate. Most importantly, Dr. Udelson said, SPECT MPI is the only imaging modality that is available with class I, level A evidence to support its use in the management of acute chest pain.

According to Udo Hoffmann, MD, Harvard Medical School, Boston, MA, computed tomography is the best imaging modality for use in the assessment of suspected ACS. Coronary artery disease (CAD) is the most common cause of ACS, occurring in up to 90% of cases. CT has a "nearly perfect" negative predictive value, meaning that the absence of CAD allows up to 50% of patients to be discharged early and safely from the emergency department. Therefore, CT meets important goals of emergency care, including quick turnover and the identification of patients who do not require hospital admission.

Andrew E. Arai, MD, National Heart, Lung, and Blood Institute, Bethesda, MD, stated that cardiac MR provides more than an assessment of heart function. Unlike other imaging modalities, cardiac MR provides important information about the ischemic or infarcted myocardium itself. For example, cardiac MR effectively detects and distinguishes acute from chronic MI. Cardiac MR also provides information on the extent of perfusion, heart muscle viability, area at risk, culprit vessel location, and adequacy of reperfusion.

Perfusion cardiac MR is a valuable alternative to SPECT MPI for the detection of CAD and shows evidence of superiority over SPECT (Figure 1) [Schwitter J et al. *Eur Heart J* 2008]. Overall, evidence is mounting to support the use of cardiac MR in the assessment of patients with suspected ACS, Dr. Arai concluded.

Figure 1. SPECT Versus Cardiac MR in the Detection of CAD.