Scoring System Can Predict Cardiac Mortality

BY BETSY BATES
Los Angeles Bureau

LOS ANGELES — Specific findings on adenosine stress myocardial perfusion imaging can be combined with other risk factors to offer precise guidance about whether a patient would obtain a significant survival advantage with early revascularization, Rory Hachamovitch, M.D., said at a meeting sponsored by the American College of Cardiology.

Dr. Hachamovitch outlined the simplest of three new prognostic adenosine scores he validated in a group of 5,873 consecutive patients who underwent adenosine stress, dual-isotope single-photon emission computed tomography (SPECT) scanning, and were followed for a mean 2.2 years.

The simple score uses a patient's age, percent of ischemic myocardium, percent of fixed myocardium, presence or absence of dyspnea, resting ECG results, resting and peak stress heart rates, and scan results following early revascularization to predict 2-year mortality from cardiac causes.

Because revascularization can be plugged into the equation or left out, the formula can offer specific guidance as to the clinical management of an individual patient, said Dr. Hachamovitch of the clinical cardiovascular medicine unit at the University of Southern California, Los Angeles.

He offered the example of an 80-year-old man with atypical angina, assessing points to account for his age, the fact that 30% of his myocardium is ischemic, and other clinical characteristics and scan findings.

His final score was plotted on the *x*-axis of a graph against the 2-year Kaplan Meier Survival Curve on the *y*-axis.

The hypothetical patient received a total of 150 points if he underwent medical therapy, for a survival score of 91%, meaning he had a 9% chance of dying of cardiac causes in the ensuing 2 years.

When revascularization was factored into the formula, the patient's score dropped to 85 points, and his 2-year survival estimate rose to 97%.

The derivation of such a formula has been dependent on years of research into risk stratification for cardiac patients based on nuclear scan findings, said Dr. Hachamovitch at the meeting, which was cosponsored by the American Society of Nuclear Cardiology and Cedars-Sinai Medical Center.

This research has determined predictors of both relative and absolute risk reduction based on nuclear perfusion study results. Following Dr. Hachamovitch's talk, his findings were published (J. Am. Coll. Cardiol. 2005;45:722-9).

The relative benefit of revascularization over medical therapy after nuclear imaging is dependent on the extent and severity of the myocardium at risk.

The absolute benefit of revascularization— number of lives saved per 100 treated—depends on left ventricular ejection fraction (LVEF) and underlying clinical risk factors.

"Hence, if you want to figure out who is in need of revascularization, look for ischemia. If you want to know how big an impact on their survival that revascularization will be, look at LVEF and clinical risk factors," said Dr. Hachamovitch. ■

Perfusion Scans Warrant Immediate Notification

BY BETSY BATES
Los Angeles Bureau

LOS ANGELES — High-risk findings on myocardial perfusion studies require an immediate telephone call from a nuclear cardiologist to the referring physician, even when the temptation is to perform more tests to clarify the extent of cardiac viability, said Robert C. Hendel, M.D., at a meeting sponsored by the American College of Cardiology.

Dr. Hendel presented the case of a 31-year-old man, 6' 4" tall, 244 pounds, who presented with exertional chest pain. He had a history of radiation therapy for Hodgkin's disease.

During cardiac function tests, the patient was only able to proceed 4.5 minutes on the Bruce protocol before he experienced chest pain with ST-segment changes lasting about 15 minutes.

The patient's nuclear single-photon emission computed tomography (SPECT) images showed significant ischemia and large regions of decreased perfusion. Yet, in the interaction session attended by nuclear cardiologists, just over half of audience members voted that they would respond by immediately calling the referring physician.

Other attendees split their votes among other options, including repeating the SPECT using pharmacologic stress, performing additional imaging to assess viability, or reporting the likelihood of single-vessel disease.

Clearly, those in attendance were influenced by the patient's young age and the fact that more studies might provide more precise information.

However, the study's findings, combined with the patient's response to the cardiac function test, should be enough to warrant an immediate consultation with the referring physician, said Dr. Hendel at the meeting, which was cosponsored by the American Society of Nuclear Cardiology and Cedars-Sinai Medical Center.

"This is a very high-risk study," he said. "Our responsibility is to pick up the phone and communicate that kind of information."

In the case he presented, consultation with the referring cardiologist led to a referral to coronary angiography. The patient was found to have extensive coronary artery disease, including high-grade narrows (greater than 95%) in the proximal left anterior descending coronary artery involving the bifurcation of a large first diagonal branch.

"This high-risk anatomy was unsuitable for percutaneous coronary intervention, and he was referred for bypass surgery," said Dr. Hendel following the meeting.

One week after his SPECT study, the patient underwent five-vessel bypass graft surgery. "He is doing well now, without symptoms."

Dr. Hendel, a former president of the American Society of Nuclear Cardiology who practices with Midwest Heart Specialists in Fox River Grove, Ill., said nuclear cardiologists should lower their threshold for immediately conveying ominous test results to referring physicians. ■

Women Undergoing Angioplasty for MI at High Risk

ORLANDO — Women undergoing primary angioplasty for acute MI continue to have significantly higher mortality than men, even in the contemporary era of potent antiplatelet therapy regimens and high-pressure stent deployment, according to a large and comprehensive patient series from the New York State Coronary Angioplasty Reporting System Registry.

In a cohort of 9,015 consecutive acute MI patients—29% of them women—who underwent primary percutaneous coronary intervention (PCI) in New York state during 1997-1999, unadjusted in-hospital mortality was 6.7% in women and 3.4% in men. Mean hospital length of stay was also significantly greater in the women: 7.5 days, compared with 6 days for men, Jeffrey S. Berger, M.D., reported at the annual meeting of the American College of Cardiology.

The composite major adverse cardiovascular event rate—comprising death, emergency coronary artery bypass surgery, catheter-site complications, need for renal dialysis, stroke, abrupt vessel closure, or stent thrombosis—was 10% in women, compared with 5.7% in men, added Dr. Berger of Beth Israel Medical Center, New York.

However, women as a group were at higher risk of complications related to urgent PCI than were men. They were significantly older, by a mean of nearly 7 years. They also had higher prevalences of diabetes, hypertension, and peripheral vascular disease and were more likely to have a history of stroke.

Yet even after adjusting for all of these potential confounders in a multivariate logistic regression analysis, investigators still found female gender remained a strong independent risk factor for adverse outcome, with an associated 42% increased relative risk of in-hospital mortality.

A major caveat regarding the state registry is that the data are nonrandomized and retrospective, so it's possible that significant differences between men and women undergoing primary PCI for MI remain uncontrolled for and unrecognized.

—Bruce Jancin