Scoring System Might Reduce Need for Stress Tests

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — In some patients being evaluated for chest pain, stress tests might be avoided through the use of an algorithm designed to predict the probability of cardiac ischemia, David D. Moyer-Diener and his associates said at the annual meeting of the American College of Emergency Physicians.

In a prospective, observational cohort study of consecutive patients evaluated at a chest pain center, investigators obtained Acute Coronary Ischemia–Time Insensitive Predictive Instrument (ACI-TIPI) scores and conventional chest pain workups on 1,478 low- or intermediate-risk patients for whom acute myocardial ischemia had been ruled out. The treating physicians were blinded to the ACI-TIPI scores, and patients underwent conventional evaluations including serial enzyme tests and provocative cardiac testing.

Among 400 patients who had ACI-TIPI scores of 20 or less, 265 were men younger than aged 35 years or women younger than aged 45 years, and 217 underwent provocative cardiac testing. None of the 265 patients developed acute coronary syndrome within 30 days, as determined by phone calls to patients and reviews of records and the Social Security Death Index.

If clinicians had used an ACI-TIPI score of 20 or less in these subsets of young patients to exclude provocative cardiac testing and had sent these patients home, 15% of all stress tests in the study cohort could have been avoided without causing any harm, said Mr. Moyer-Diener, a medical student at the University of Michigan, Ann Arbor, who conducted the study with Michael G. Mikhail, M.D., and associates at the university.

At the meeting, physicians on a separate panel discussing cutting-edge research both praised and criticized the study.

"There's been a lot of debate about just how useful" an ACI-TIPI score is, said Charles V. Pollack Jr., M.D., chair of emergency medicine at Pennsylvania Hospital, Philadelphia. Many emergency physicians would rather not have a quantitative number related to the risk of ischemia on a patient's chart, he said, because if the case sparks a lawsuit, they would rather defend their clinical impression that the patient didn't have ischemia.

The ACI-TIPI was designed to predict the probability of cardiac ischemia on a 0- to 100-point scale, to serve as support or a "second opinion" in clinical decision making. The way ACI-TIPI was used in the study to identify patients who don't need further tests "is not really the use for which it was designed," but the idea is intriguing, Dr. Pollack said.

Jerome R. Hoffman, M.D., lauded the investigators for trying to identify a strategy to cut down on the many unnecessary tests performed for chest pain evaluation that are not backed by evidence-based medicine. "It's very hard to get us out of that rut," said Dr. Hoffman, professor of emergency medicine at the University of California, Los Angeles.

But physicians are unlikely to adopt these criteria for avoiding stress tests. An ACI-TIPI score of 20 or less is associated with a 19% risk of acute myocardial ischemia, he explained. For medicolegal reasons, physicians will not feel comfortable sending patients home if that number appears on a patient's chart.

"That, more than anything, makes me question the value of an ACI-TIPI—other than as a research tool," Dr. Hoffman said.

Previous studies have shown that physicians were two to three times more likely to admit patients if given an ACI-TIPI score to include in the patient's chart, said Ian G. Stiell, M.D., of the University of Ottawa.

Dr. Pollack noted that the current study claimed to exclude patients with acute myocardial ischemia. "I think that's a dangerous statement," he said, "because ordinarily that is done in a chest pain center by measuring serial troponin levels, which excludes only necrosis. It doesn't exclude ischemia." ■

Agonal Breathing Assessment Sharpens Dispatchers' Cardiac Arrest Detection

BY BRUCE JANCIN
Denver Bureau

NEW ORLEANS — Tweaking emergency dispatcher assessment protocols to include simple questions about agonal breathing markedly boosts the rate of cardiac arrest detection over the phone, Ahamed H. Idris, M.D., reported at the annual scientific sessions of the American Heart Association.

The result is a greater than 30% increased likelihood that CPR will be started by bystanders after a 911 call, well before emergency medical services (EMS) personnel arrive. That increases the chances for survival, added Dr. Idris, professor of emergency medicine at the University of Texas, Dallas.

Studies from Sweden, Seattle, and Dallas have shown that CPR is withheld from up to 40% of people with out-of-hospital cardiac arrest because potential rescuers or 911 dispatchers misinterpret agonal breathing as an indication that the individual is not in cardiac arrest, Dr. Idris said.

Agonal breathing—a distinctively slow breathing pattern in which the collapsed person seems to gasp for air—is extremely common shortly after the respiratory center in the brainstem becomes deprived of oxygen-rich blood. "That's the time when people are most likely to actually be saved if they receive intervention," said Dr. Idris, a member of the AHA Emergency Cardiovascular Care Committee.

Prior to the change, 28% of all cardiac arrests were missed, compared with 18.8% after the change.

DR. IDRIS

He and his coworkers in an AHA-sponsored trial devised three simple questions to use in emergency dispatcher protocols to better identify cardiac arrest by phone. (See box at left.) They studied all 962 cases of dispatcher-assisted out-of-hospital cardiac arrest in the Dallas area during the 8 months before and 4 months after implementation of the protocol. Prior to the change, 28% of all cardiac arrests were missed, compared with 18.8% after the change.

In a separate presentation, researchers described a new approach to improving the rate of prompt CPR by lay rescuers in out-of-hospital cardiac arrest, using a brief, self-guided CPR video instruction method for the public that takes one-eighth the time of the usual 4-hour CPR group class.

Middle-aged adults are most likely to witness a cardiac arrest, but are underrepresented in the standard 4-hour CPR Heartsaver training classes, which tend to attract a younger crowd, said Bonnie C. Lynch, Ph.D.

The AHA commissioned the development of a 30-minute CPR self-training kit. Designed for home or work settings, the kit includes a 20-minute video, an inflatable mannequin, and an electronic coaching device that gives feedback about the trainee's chest compression technique.

In a randomized trial, three-fifths of a group of 285 Portland, Ore.–area 40- to 70-year-olds used the kit, one-fifth took the standard 4-hour CPR training course, and the others received no training.

CPR skills testing by blinded evaluators after the training showed that kit users were as skilled as those who completed the standard class. Two months later, the two groups remained closely comparable, said Dr. Lynch of RMC Research Corp., Portland.

The kit is slated to become commercially available by midyear. ■

The Questions Dispatchers Should Ask

► Is the person awake and conscious?
► Is the person breathing normally? Count the breaths and describe what they sound like. (An interval of 10 or more seconds between breaths is a marker for agonal breathing and an indication to start CPR.)
► Is the person moving?

Device Improves Diagnosis of Acute Coronary Syndrome

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — An ECG mapping device improved the diagnosis of acute coronary syndrome, compared with standard ECG, and provided information that could help with treatment, said Gregory J. Fermann, M.D., at the annual meeting of the American College of Emergency Physicians.

In a study of 90 adult patients, those evaluated in the emergency department for acute coronary syndrome by ECG and cardiac markers underwent both the standard 12-lead ECG and cardiac mapping using the Prime ECG System. Approved in 2001, the Prime ECG uses 72 unipolar leads placed in a vest-like distribution over the front, back, and sides of the patient's torso to obtain a three-dimensional view of cardiac electrical activity. Standard ECG uses six unipolar leads. Both ECG systems use six additional limb leads.

Meridian Medical Technologies, which makes the Prime ECG System, funded the study.

Physicians managing the patients were first given results of the standard ECG and asked to estimate the probability that the patient had acute coronary syndrome. They then received the cardiac mapping results and were asked the same question. The physicians were also asked whether the cardiac mapping gave them additional information, compared with standard ECG, and whether the mapping might help guide treatment. Patients were followed for objective evidence of acute coronary syndrome in the hospital and assessed 30 days after discharge for adverse outcomes.

The investigators compared physicians' responses with the diagnosis of acute coronary syndrome. Estimates based on cardiac mapping were more sensitive than estimates based on standard ECG at identifying acute coronary syndrome (40% vs. 20%). Standard ECG and cardiac mapping showed similar specificity (93% vs. 92%, respectively) in diagnosing acute coronary syndrome, said Dr. Fermann, director of clinical operations at the University of Cincinnati.

Physicians in the study said cardiac mapping provided additional information in 51 of the 90 cases and said the results would assist in treatment in 53 cases, Dr. Fermann reported. The cardiac mapping results increased the likelihood of a diagnosis of acute coronary syndrome in 11 cases and decreased the likelihood in 32 cases. Cardiac mapping was more sensitive than standard ECG in diagnosing a subset of patients who had acute coronary syndrome, those with non–ST segment elevation MI. ■