

# Hypothermia Cuts Cognitive Deficits Post CABG

*The practice could provide physicians with a new strategy for warding off these deficits.*

BY MITCHEL L. ZOLER  
Philadelphia Bureau

DALLAS — Mild hypothermia reduced the incidence of postoperative cognitive deficits in patients undergoing coronary bypass surgery, according to results from two studies with 448 patients.

"Mild hypothermia is a new potential strategy to prevent postoperative cognitive deficits in patients undergoing coronary artery bypass surgery," Dr. Munir Boodhwani said at the annual scientific sessions of the American Heart Association.

Other factors were associated with an increased risk of postoperative cognitive deficits (POCD), but they are not easily modified. They were prolonged stay in the intensive care unit following surgery, abnormal left ventricular function, a high serum level of serum creatinine preoperatively, and a higher education level. Al-

though no specific interventions can help a patient who needs coronary bypass surgery but has impaired ventricular or renal function (the second causes a high level of serum creatinine), patients with several of these high-risk markers might benefit from special surgical precautions such as off-pump surgery or a "no-touch" technique, said Dr. Boodhwani, a cardiothoracic surgeon at Beth Israel Deaconess Medical Center in Boston.

The analysis combined data from two studies at the University of Ottawa Heart Institute that were designed to assess the efficacy of mild hypothermia. One study, which was done during 1995-1998, randomized 223 patients and tested the efficacy of treating patients at either 34° C or 37° C during the rewarming phase of coronary bypass surgery. The second study, which was done during 2001-2004, compared surgery at 34° C or 37° C during the

entire operative period in 263 patients. The results were pooled for all 486 patients; postoperative neurocognitive assessments were not done on 38 patients, leaving 448 for this analysis.

The neurocognitive analyses used a battery of 11 tests and categorized deficits into three domains: memory and learning, attention, and psychomotor speed and dexterity. The tests were administered an average of 15 days before surgery and again postoperatively but prior to hospital discharge, an average of 7.7 days after surgery. A patient was considered to have a deficit if one or more of the patient's scores dropped by at least 0.5 standard deviations, compared with preoperative levels.

The overall incidence of POCD was 59%. Of the 265 patients with POCD, 61% had a deficit in a single domain, 30% had a deficit in two domains, and 9% had deficits in all three domains.

In a multivariate analysis that controlled for baseline differences in clinical and demographic measures, normothermia during surgery was associated with

a statistically significant 15% increased risk of POCD, compared with patients who were treated with hypothermia.

Other statistically significant determinants of POCD in the multivariate model included stay in the intensive care unit following surgery for more than 24 hours, a marker of more severe underlying disease, which was linked with an 88% increased rate of POCD. Abnormal left ventricular function prior to surgery was linked with a 53% increased risk of POCD. For every 1 mmol/L increase in serum creatinine level prior to surgery, the risk of POCD rose by 1%. And patients with an education level that was above the 12th grade were 52% more likely to have POCD.

The impact of elevated serum creatinine on the rate of POCD was not uniform. At preoperative levels up to 125 mmol/L (equal to 140 mg/dL), the risk of POCD rose linearly as the level of serum creatinine increased. But above 125 mmol/L the risk of POCD increased exponentially, Dr. Boodhwani said. ■

## Deaths, Complications Missed in Meetings

BY BETSY BATES  
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SAN FRANCISCO — Morbidity and mortality conferences at Massachusetts General Hospital missed three out of every four complications and one of every two deaths in surgical patients over the course of a year, Dr. Matthew M. Hutter reported at the annual clinical congress of the American College of Surgeons.

Dr. Hutter and associates compared statistics compiled by a nurse reviewer in conjunction with the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) with cases discussed at weekly morbidity and mortality (M&M) conferences.

In 1,439 sampled cases representing 24% of operations,

the NSQIP reviewer found a 29% morbidity rate and 28 deaths. Weekly M&M conferences during the same year addressed morbidity in just 6% of cases and made note of just 14 of the deaths.

An analysis of the cases determined that the ACS-NSQIP program identified significantly more complications of every subtype, including wound infections, cardiac complications, urinary tract and renal issues, and others.

Deaths not mentioned in any M&M conference included six due to patient disease and seven that occurred after patients had been transferred to a medical service or when they were being treated as outpatients within 30 days of surgery. One death unaccounted for in M&M conferences had incomplete data.

"At Massachusetts General, we pride ourselves ... in a supposedly rigorous academic environment. We decided things had to change," said Dr. Hutter, director of the hospital's Center for Clinical Effectiveness in Surgery and a member of the surgery department faculty at Harvard Medical School, Boston.

As a result of the study, the hospital has significantly bolstered the content and revised the structure of its M&M conferences, by including, for example, an ongoing review of its own NSQIP results and comparative data from other hospitals. It also has introduced a Web-based reporting tool that standardizes definitions for complications and allows residents and others to quickly input information about any case.

Although the confidential system can be accessed only for peer review, it contains data about everything from a postsurgical infection to an unanticipated return to the operating room or intensive care unit.

The Web-based system serves as an objective, watchful eye on individual patients and the care they receive. It also captures trends that can be identified and used to improve systems, feedback, and approaches to care.

The changes cost \$100,000, but if they reduce complications at the same rate seen in the landmark Veteran's Administration NSQIP study, it will end up saving millions, Dr. Hutter asserted.

The NSQIP system was implemented in 1991. By 2001, the NSQIP system in Veterans Affairs hospitals had documented a 27% decrease in complica-

tions and a 45% improvement in morbidity, including a 50% drop in major complications, resulting in \$11,000 in savings for each case in which a complication did not occur.

"With this report, we are starting to hear the death knell of the traditional M&M conference," said Dr. David R. Flum, a surgery department faculty member at the University of Washington in Seattle who served as a formal discussant of Dr. Hutter's paper.

Dr. Flum noted that although M&M conferences were "never really intended to be a surveillance system" and served a historic function of revisiting errors, they have often been grounded in opinion, marred by recall bias, and sometimes even driven by "personal and political vendettas."

Not every complication or death offers a lesson to be learned, he added, noting some of the Massachusetts General deaths resulted from carcinomatosis or total gut necrosis discovered during surgery. But an accurate and consistent real-time surveillance system will provide invaluable information and lead to improved care, he said.

"They took the best elements in this system—standardized definitions, standardized reporting criteria—and they empowered their residents to become the surveillance system," he noted.

M&M conferences were established in the early 1900s by Dr. Ernest Amory Codman, the "father of surgical outcomes," who called the review of cases an "end results system."

Weekly M&M conferences have been required by the American College of Graduate Medical Education for surgical residency programs since 1983 and have been an integral tradition of surgical departments in academic and community hospitals for decades. ■

## Short Stay in ICU Is Found Safe for Low-Risk Bypass Patients

A short stay in the ICU is safe and cost effective for low-risk patients who have undergone coronary artery bypass grafting, according to Ghislaine van Mastrigt of Maastricht (the Netherlands) University Hospital and associates.

A "fast-track" ICU stay of 8 hours or less "can be considered as an alternative to conventional postoperative ICU treatment for low-risk CABG patients," the researchers said.

They assessed the safety of early ICU discharge in a study of 600 CABG patients after noting that "fast-track treatment after cardiac surgery is becoming very popular, although evidence-based research on safety and cost effectiveness is limited."

A total of 300 subjects were randomly assigned to a short ICU stay and 300 to a conventional overnight stay in the ICU after CABG surgery at the university hospital between 2001 and 2003. Mean patient age was 62 years, and 80% of the patients were men. The rate of readmission to the ICU was 2.7% (eight patients) in the short-stay group and 1.3% (four patients) in the control group, a difference that was not statistically significant. There also were no significant differences between the two groups in postoperative morbidity, 30-day mortality, or total hospital stay, the investigators said (Crit. Care Med. 2006;34:65-75).

There was a small but significant advantage in quality of life measures for the short-stay group, "However, it is questionable whether [quality of life] improvement is clinically relevant," Ms. Mastrigt and associates noted.

Hospital costs were significantly lower for the fast-track patients, mainly because their stays in the high-cost ICU were a mean of 11 hours shorter than those in the conventional-care group. The short-stay group also had fewer of the laboratory tests that are usually done in the ICU. Costs of other routine hospital care and outpatient procedures were comparable for the two groups.

—Mary Ann Moon