Cryoablation in Valve Repair Halts Atrial Fib in 80%

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — Cryothermia ablation of atrial fibrillation restored sinus rhythm in more than 80% of 114 consecutive patients undergoing concomitant mitral valve surgery, Dr. Sacha P. Salzberg said at the annual meeting of the International Society for Minimally Invasive Cardiothoracic Surgery.

The investigators retrospectively reviewed patient charts and prospectively mailed a follow-up questionnaire to the referring doctors.

Patients were treated between January 2003 and June 2005 for paroxysmal atrial fibrillation in 55% and chronic atrial fibrillation in 45%. Degenerative mitral valve disease made up the bulk of valvular problems treated; 77% of patients underwent valve repair, and 23% had valve replacement, said Dr. Salzberg, whose research was performed at Mount Sinai Medical Center, New York.

Patients had a mean age of 66 years and had atrial fibrillation for a mean of almost 3 years before the cryosurgery. A total of 4% of patients died during surgery; 85% were discharged from the hospital with their sinus rhythm restored, said Dr. Salzberg and his associates.

Several lesion sets for ablation have been described for the left or right atria; the current study primarily created lesions on the left atria and included endocardial pulmonary vein isolation with a connecting lesion to the posterior aspect of the mitral valve annulus. In 8% of patients with documented atrial flutter, the physicians also made a right atrial set of lesions, said Dr. Salzberg, now of the University of Zurich.

A new pacemaker was needed in 8% of patients: six patients with sick sinus syndrome and three with third-degree heart block.

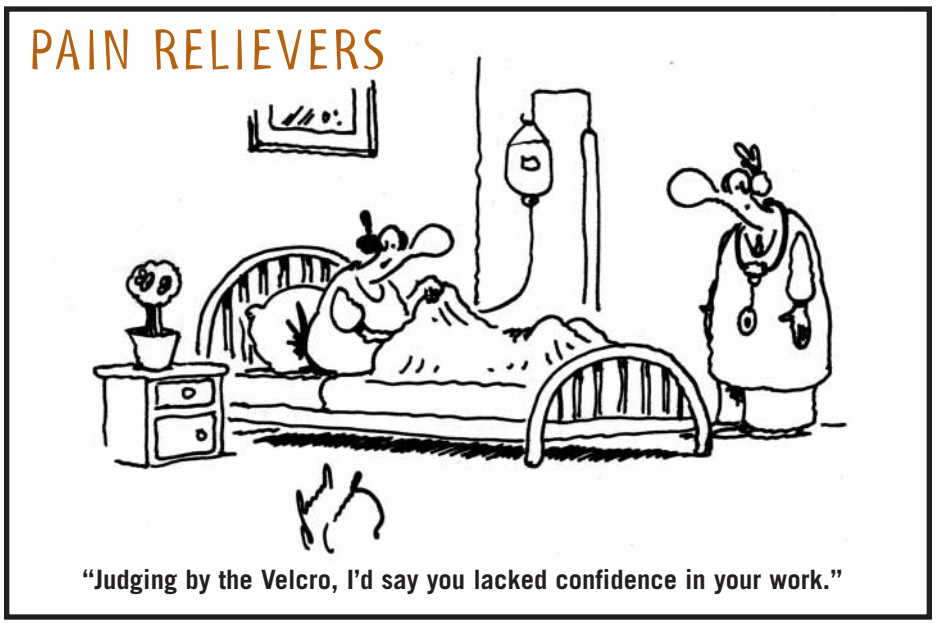
At 1-year follow-up, approximately 80% of patients remained in sinus rhythm. Use of anticoagulants and antiarrhythmic medications declined. There were no strokes and no complications related directly to the cryothermia ablation.

Cryothermia is a relatively new alternative to surgical ablation of atrial fibrillation, a well-accepted adjunct therapy in patients undergoing valvular surgery.

Although the Cox-Maze III procedure is considered the standard for surgical treatment of atrial fibrillation because of its high cure rate and long-term patency, the surgery is technically challenging, carries a high risk for renal problems, and is seldom performed, with only about 1,000 cases done in the past decade, said Dr. Salzberg.

Cryothermia should be applied routinely to patients undergoing mitral valve surgery with a history of atrial fibrillation, the investigators suggested.

The study's lead author was Dr. Farzan Filsoufi of Mount Sinai. Dr. Filsoufi and Dr. Salzberg have no financial association with the company that makes the cryothermia instrument, which applied a temperature of –160° C to create the atrial lesions. ■



"Judging by the Velcro, I'd say you lacked confidence in your work."

Combined Monitoring Helps Avoid Neurologic Complications

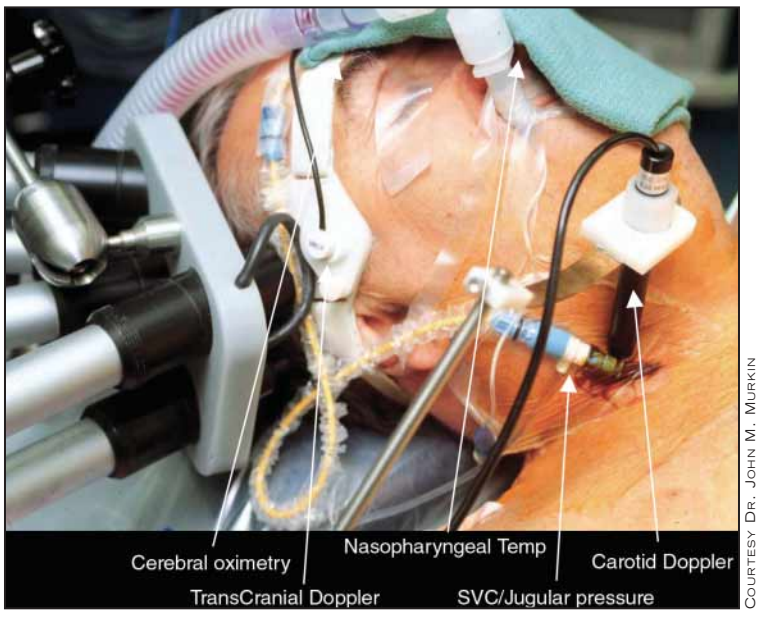
BY KERRI WACHTER
Senior Writer

OTTAWA — As age, degree of disease burden, and number of comorbidities rise among cardiac surgery patients, multimodality neuromonitoring is becoming increasingly important, Dr. John M. Murkin said at a meeting of the World Society of Cardio-Thoracic Surgeons.

Multimodality neuromonitoring includes epiaortic scanning of the aortic arch and ascending aorta to guide the canula and clamp placement, jugular venous pressure monitoring for cerebral perfusion pressure, use of transcranial Doppler to monitor cerebral blood flow velocity and detect emboli, near-infrared spectroscopy to detect cerebral malperfusion, and nasopharyngeal/tympanic temperature monitoring to avoid hyperthermia.

"It's clear that many of the patients that we operate on for coronary revascularization also have significant systemic atherosclerosis," said Dr. Murkin, a professor of anesthesiology at the University of Western Ontario in London, Canada. Studies have associated cerebrovascular disease with postoperative neurologic abnormalities.

Most surgeons use mean arterial pressure as a surrogate for cerebral perfusion pressure but this is not necessarily appropriate. Venous outflow obstruction and cardiac dislocation can compromise cerebral perfusion pressure. For example, dislocation of the heart increases pressure in the superior vena cava but decreases cerebral perfusion pressure. Such drops in cerebral perfusion pressure can occur without a change in mean arterial pressure or mixed venous saturation but can result in profound cerebral desaturation, said Dr. Murkin, who disclosed that he has been supported by a number of equipment manufacturers. In particular he has received research support from Somanetics Corporation and is a consultant for Impulse Monitoring Inc., both of which produce neurophysiologic monitors.



COURTESY DR. JOHN M. MURKIN

Several methods were used to monitor this patient for neurologic complications that can result from decreased cerebral perfusion, emboli, and hyperthermia.

"One of the things we've been advocating is to display the pressure in the proximal superior vena cava, by monitoring cerebral venous outflow using the introducer port of a pulmonary artery canula or a central venous pressure canula and using cerebral oximetry to detect critical perfusion pressure," Dr. Murkin said.

It's also been demonstrated that there is significantly more jugular venous oxygen desaturation during beating heart procedures involving heart verticalization, compared with conventional bypass procedures. This could help explain why some studies have found no difference in the incidence of neurologic complications between beating heart procedures and conventional CABG. It was assumed that beating heart procedures would lead to fewer neurologic complications because of fewer emboli.

Patients at high risk—those undergoing deep hypothermia circulatory arrest or those with a high stroke risk, for example—can benefit from transcranial Doppler (TCD) and cerebral oximetry.

Most commonly performed on the middle cerebral artery, TCD provides a qualitative measure of cerebral blood flow velocity. TCD also uses the change in the return of sound waves to detect emboli, allowing surgeons to change technique to minimize emboli. Multigating—a technique that focuses signals at two different depths—allows physicians to differentiate artifacts or background noise from emboli. A signal that is picked up at both depths simultaneously strongly suggests an artifact.

Another TCD technique uses two frequencies of sound waves to distinguish between particulate and air emboli, which can have very different clinical significance. The technique is still under investigation but results so far have been promising.

TCD is not without problems though. Placing the transducer can require a great deal of skill. In as many as 20% of adults it is very difficult to find the temporal window along the zygomatic arch—the area of the skull which is thin enough to allow adequate penetration of sound waves.

Spatially resolved near-infrared spectroscopy (NIRS) detects changes in cerebral cortical oxygen saturation by measuring the changes in absorption of infrared light by hemoglobin—indicating the changing amount of oxygen present in the brain. In comparison with TCD, cerebral oximetry is easy to apply using non-invasive sticky pads placed bilaterally over the forehead and can be monitored in any patient. It allows clinicians to detect and correct decreases in cerebral oxygenation that may be otherwise undetected.

Studies have shown that during rewarming, bladder temperature rises slowly to 37° C but tympanic temperature (as a surrogate for brain temperature) rises more rapidly and may even significantly exceed 37° C. "We know that hyperthermia can exacerbate cerebral ischemic injury," Dr. Murkin said.

Measuring nasopharyngeal, tympanic, or jugular bulb temperature is much more reflective of cerebral temperature. "The current recommendation is that the aortic inflow temperature should not exceed 37° C," Dr. Murkin said. ■