Remote Pacemaker Interrogation More Sensitive

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — Remote interrogation of pacemakers detected more cardiac events that might require a clinical response, compared with traditional pacemaker follow-up, but did not alter clinical response rates in a study of 897 patients.

The results suggest that remote interrogation of pacemakers has the potential to identify problems earlier and to reduce the time to starting therapy if needed, but further studies are necessary to verify whether enhanced detection affects clinician response, Dr. Bruce L. Wilkoff said at the annual meeting of the Heart Rhythm Society.

Internet-based remote monitoring systems have been studied in patients with implantable cardioverter defibrillators, but this is one of the first studies of remote interrogation in patients with pacemakers.

The prospective Pacemaker Remote Follow-Up Evaluation and Review (PREFER) trial randomized 295 patients with pacemakers to conventional monitoring using transtelephonic rhythm strip evaluations and 602 patients to remote interrogation of pacemakers over a 12-month period. Remote interrogations were done at 3, 6, and 9 months, with a live visit at 12 months. Transtelephonic monitoring was performed every 2 months, with live visits at 12 months for patients with single-chamber pacemakers and at 6 and 12 months for patients with dual-chamber pacemakers.

During the 1-year follow-up, a total of 45% of patients in the remote interrogation group and 38% in the transtelephonic monitoring group had evidence of one or more predefined "clinically actionable events." These were events that would be likely to trigger clinician response, such as nonsustained ventricular tachycardia, new onset of atrial tachyarrhythmias or atrial fibrillation (AT/AF), electric replacement of the pacemaker indicated, or end of life of the device.

Remote interrogation identified 66% of the clinically actionable events before the live follow-up visit, compared with only 2% of clinically actionable events identified remotely by transtelephonic monitoring (and the rest identified later at live follow-ups), reported Dr. Wilkoff, director of cardiac pacing and tachyarrhythmia devices at the Cleveland Clinic, and his associates.

Remote interrogation has the potential to identify problems earlier and to reduce the time to therapy, if needed.

DR. WILKOFF

Early detection of new onset AT/AF was significantly more likely with remote interrogation than with transtelephonic monitoring, which could lead to earlier initiation of therapy and a reduction in risk for stroke, Dr. Wilkoff said.

In this study, however, the significant difference in remote detection of events did not lead to a significant difference in overall clinical response. Of events detected, clinicians acted on 19% in the remote interrogation group and on 15% in the transtelephonic monitoring group.

The study was funded by Medtronic Inc., which makes the remote interrogation system used in the study. Dr. Wilkoff is a consultant for Medtronic. He also has received research funds from or is a consultant to several device makers.

Because of its low yield, "The value of transtelephonic monitoring is limited and may be of clinical significance mostly for the detection of battery depletion," Dr. Wilkoff suggested. With remote interrogation, in contrast, "rate, duration, electrograms—everything that's in the pacemaker, you can see," he explained.

He did not have data on the specificity of remote interrogation and how many detected events led to further work-ups that were not necessary.

Dr. Wilkoff noted that the pacemaker monitoring technology is only a part of follow-up plans, which should emphasize communication with patients. By communicating more detailed information to patients with each remote interrogation, "we don't have less of a relationship with them. We actually have more of a relationship."

The newer remote interrogation technology seemed as acceptable to patients as the older transtelephonic monitoring technology, which has been in use since the 1970s, he added. ■

Most Eligible Patients Who Want ICDs Receive Them

BY MITCHEL L. ZOLER
Philadelphia Bureau

TORONTO — The rate at which eligible, appropriate patients with a low left-ventricular ejection fraction miss out on getting an implantable cardioverter defibrillator might be lower than most people think.

After accounting for ineligible patients and those who refused the device, the "true miss" rate, or rate of patients with ejection fractions of 35% or less who failed to get an implantable cardioverter defibrillator (ICD), was 7% in a randomly selected sample of 228 patients who underwent echocardiography scanning during 2005-2007 at Jefferson Medical College, Philadelphia.

This proportion was much smaller than what many experts have estimated. The ICD implant rate in large observational studies has usually been reported as about 25%-40% in patients with left ventricular ejection fractions of 35% or less, Dr. Shaw Natan said while presenting a poster at the 14th World Congress on Heart Disease. At Jefferson, the implant rate in the 228 patients who were the focus of this study was 42%. These rates suggest that more than half of patients with severe left ventricular dysfunction do not get an ICD. That may be true, but assessing each patient individually showed that in most cases there was a good reason for the omission.

"There are many reasons why a patient may not be a candidate" for an ICD, said Dr. Natan, a cardiologist formerly at Jefferson and now at St. Elizabeth's Medical Center in Boston. "You can't simply say that if a patient with an ejection fraction of 35% or less does not get an ICD, it's a miss," he said in an interview at the congress, sponsored by the International Academy of Cardiology.

The 228 patients in the sample had an average age of 66 (range 29-96), and 68% were men. Their average left ventricular ejection fraction was 21%. Slightly more than half the patients had an ischemic etiology for their heart failure, 26% had a nonischemic etiology, and the remainder had an unknown etiology.

Among the 132 patients in the sample who did not get an ICD, 89 (39% of the total group) were ineligible. This group included 34 who had an inadequate trial of medical treatment or revascularization, 19 who died, 17 who had dementia or a life expectancy of less than 1 year, 10 who were lost to follow-up, and 9 with other reasons.

Of the remaining 43 patients who did not have a contraindication for an ICD, 27 declined the device when it was offered. This left 16 patients (7% of the total number of patients evaluated) who were true misses for an ICD: They had no contraindications and were willing to receive treatment.

The 7% rate of true missed cases was similar for both men and women, and for both whites and African American patients, Dr. Natan said. The rate of missed cases was higher among the patients who had been referred for their echo exam by a noncardiology service (15% miss rate) than among those who had been referred by the cardiology service (5% miss rate). About 80% of the patients had been referred through the cardiology service. ■

Use of β-Blockers Linked to Risk Of 'Pulseless' Cardiac Arrest

BY MICHELE G. SULLIVAN
Mid-Atlantic Bureau

SAN FRANCISCO — The increased use of β-blockers may be contributing to a proportionate increase in pulseless electrical activity in cardiac arrest, Dr. Scott Youngquist reported in a poster presented at the 12th International Conference on Emergency Medicine.

His retrospective study concluded that patients whose presenting rhythm was pulseless electrical activity (PEA) were five times as likely to be taking a β-blocker as those presenting with ventricular fibrillation—a finding that raises questions about the presumed causes and treatment of PEA arrest.

"We know that β-blockers prevent patients from going into ventricular fibrillation," Dr. Youngquist said in an interview. "But patients who have [ventricular fibrillation] as a presenting rhythm in cardiac arrest can often be shocked back into a normal rhythm. Unfortunately, there's often not much you can do for someone in PEA. The outcome is usually very poor. Furthermore, β-blockade may thwart the one medication we have: epinephrine."

Both β-blocker use and presenting PEA in cardiac arrest have increased over the past 20 years, said Dr. Youngquist, now at the University of Utah, Salt Lake City. β-Blockers are now the fourth most-commonly prescribed medication for hypertension, and about 60% of post-MI patients at all hospitals are discharged on β-blockers.

At the same time, however, PEA has gone up as well. In the 1980s and 1990s, ventricular fibrillation (VF) accounted for up to 60% of all out-of-hospital cardiac arrests in the United States. Now, VF accounts for only about 25% of arrests, Dr. Youngquist said, and the reason is unclear.

Dr. Youngquist and his colleagues theorized that the temporal association between the two trends might be more than coincidental. They performed a chart review of 478 out-of-hospital cardiac arrests that presented to Harbor-UCLA Medical Center, Los Angeles, from 2001 to 2006. Most of the patients (59%) were male; the median age was 70 years.

The researchers excluded the records of patients for whom β-blocker status was unknown and for those who arrived in asystole, leaving them with a final cohort of 179; 100 (56%) of these presented with PEA and 79 (44%) with VF. Overall, 65 (36%) were taking β-blockers and 114 (64%) were not.

Significantly more patients presenting with PEA than VF were on β-blockers at the time of their arrest (49% vs. 20%). In a univariate analysis, patients taking a β-blocker were almost four times as likely to present with PEA as they were to present with ventricular fibrillation. After adjustment for misclassification of β-blocker use, confounding, and random error, the odds ratio rose to five.

Although the results are interesting, they raise as many questions as they answer. However, "if larger studies confirm this, they may suggest that we need to change the way we treat the patient in PEA," Dr. Youngquist said.

For example, glucagon is typically used to reverse a β-blocker overdose, he added, and there are some animal studies that suggest glucagon also may be useful in treating PEA. ■