Test Identifies Patients Who Don't Need ICDs

BY MITCHEL L. ZOLER
Philadelphia Bureau

NEW ORLEANS — New results further supported T-wave alternans as a way to identify patients with nonischemic cardiomyopathy who do not need an implantable cardioverter defibrillator.

Findings from a study with 446 patients done in Italy showed that among patients with nonischemic cardiomyopathy and New York Heart Association class II or III heart failure, "patients with a normal TWA [T-wave alternans] test have a very good prognosis and are unlikely to benefit from ICD [implantable cardioverter defibrillator] therapy," Dr. Gaetano M. De Ferrari said at the annual meeting of the American College of Cardiology.

In contrast, similar patients with an abnormal TWA result had a fourfold increased risk of cardiac death or a life-threatening ventricular arrhythmia during 18-24 months of follow-up, suggesting that these patients are good candidates for an ICD, said Dr. De Ferrari, chief of the cardiac ICU at Hospital San Matteo in Pavia, Italy.

The results from this "methodologically sound, prospective study confirm with high quality what [results from] other studies have shown," that the predictive value of TWA in patients with nonischemic cardiomyopathy is similar to its predictive value in patients with ischemic cardiomyopathy, said Dr. Theodore Chow, director of electrophysiology research at the Ohio Heart and Vascular Center in Cincinnati. The new findings, in combination with prior results from other studies, "provide a rationale for a careful, prospective evaluation of whether ICD implants are useful in nonischemic patients with normal TWA."

'Patients with a normal TWA test have a very good prognosis and are unlikely to benefit from ICD therapy.'

DR. DE FERRARI

Until such a trial is done, "I think that most cardiologists will still generally favor placing ICDs based on data from" the Sudden Cardiac Death in Heart Failure Trial (SCD-HeFT), which showed that ICDs significantly cut mortality in all patients with a left ventricular ejection fraction of 35% or less, said Dr. Chow in an interview.

"We need strategies to sort out who gets an ICD. It's not clear why the use of ICDs is so low, but it's hard to picture that it will be solved by having TWA measurement in all patients," commented Dr. Mariell L. Jessup, professor of medicine and medical director of heart failure and cardiac transplantation at the University of Pennsylvania, Philadelphia.

The T-Wave Alternans in Patients with Heart Failure (ALPHA) study was done at nine centers in Italy, and was funded in part by Boston Scientific, a company that markets an ICD but does not market equipment used for assessing TWA. The equipment used to measure TWA in the ALPHA study was made by Cambridge Heart.

Dr. De Ferrari and his associates screened more than 3,500 patients with heart failure to identify 446 with nonischemic, dilated cardiomyopathy, a left ventricular ejection fraction of 40% or less, New York Heart Association class II or III heart failure, and no other indication for receiving an ICD. TWA testing identified 154 patients with normal readings and 292 patients with an abnormal result.

During follow-up, the incidence of the study's primary end point—cardiac death or development of a life-threatening ventricular arrhythmia—was 10% in the patients with an abnormal TWA and 3% in those with a normal TWA, a statistically significant difference. When adjusted for baseline differences in age, gender, New York Heart Association class, and left ventricular ejection fraction, patients with an abnormal TWA reading at baseline were 3.2-fold more likely to develop the primary end point than were those with a normal TWA result.

"The most important finding" was the negative predictive value of a normal TWA result at baseline, said Dr. De Ferrari. During 18 months of follow-up, 97% of patients with a normal TWA result were free from the primary end point. "Patients with a normal TWA had a very good prognosis and were unlikely to benefit from an ICD," he said.

Dr. De Ferrari agreed with the opinion voiced by Dr. Chow: The way to prove that TWA can identify patients who do not need an ICD is to randomize patients with a normal TWA result to either receive an ICD or not and then compare the outcomes of patients in these two groups. ■

Heart Pump Improves Survival by 20% Over Standard Device

BY MITCHEL L. ZOLER
Philadelphia Bureau

NEW ORLEANS — A new-generation heart pump was at least as effective as prior models and was also substantially safer, causing fewer deaths and complications in a study with 133 patients. The new unit is also one-seventh the size of the existing model, and is silent.

These results, in a study that assessed the HeartMate II assist device as a bridge to heart transplant, "give us an encouraging look to the future of the primary indication for this treatment," as destination therapy for patients who are not eligible for a heart transplant, Dr. Leslie W. Miller said at the annual meeting of the American College of Cardiology. A study of the device as destination therapy that's designed to include 200 patients had enrolled 151 patients by late January 2007.

Despite the limitations of the current results based on the indication studied, "the data are a benchmark and branch point in the field of mechanical support. This represents an amazing accomplishment. It is a device for the future," said Dr. Miller in a conference call following his report at the meeting. The new results "will significantly impact the use of this technology."

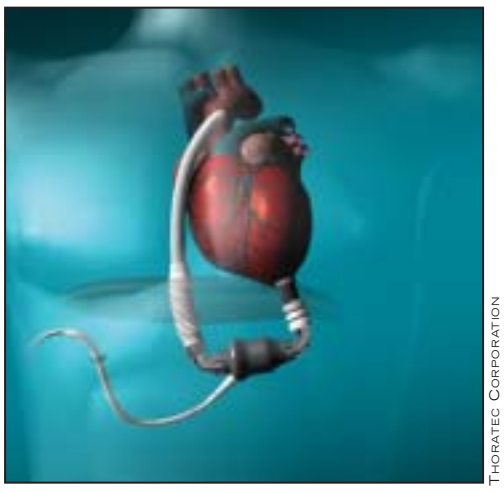
With the new device, "there's a great future for our patients with severe heart failure," said Dr. Christopher M. O'Connor, director of the heart failure and transplant program at Duke University, Durham, N.C., at the meeting.

The HeartMate II is made by Thoratec Corp., which markets the HeartMate XVE, the current, standard left ventricular assist device. Dr. Miller is a consultant to and has received honoraria and research support from Thoratec.

HeartMate II produces continuous blood flow, unlike the pulsatile pumps of prior-generation devices. In addition to being substantially smaller, the new pump is about 75% lighter than the XVE model, with a 40% smaller percutaneous lead and just one moving part, which is expected to result in much greater durability. The device should last 5-10 years in most patients, said Dr. Miller, chief of the integrated divisions of cardiology at Georgetown University, Washington.

The device was tested at 26 sites in the United States during March 2005–March 2006. The study was not randomized, and instead compared the new unit to an objective performance criterion based on the historic performance of three prior assist devices. The derived criterion stipulated that at least 75% of patients who received the new device had to survive either to heart transplant or for at least 180 days while remaining transplant eligible.

The enrolled patients were 18-69 years old, and were all listed as status 1A or 1B for a heart transplant. Their average left ventricular ejection fraction was 16%. Because of the device's smaller size, the entry criteria were expanded to include smaller patients; 21% of the patients were women, including seven women with a body surface area of less than 1.5 m^2, a size that was previously unable to accommodate an implanted assist device.



THORATEC CORPORATION

The HeartMate II is smaller and lighter than precursor devices, and has one moving part.

During follow-up, 100 patients (75%) either went on to receive a heart transplant (68 patients), survived for more than 180 days while awaiting a transplant (29), or recovered substantially and had the device explanted (3), which meant that the results met the study's primary end point. The overall average duration of device support was 168 days. Among the 29 patients who went longer than 180 days without a transplant, the average time on the device was 360 days, with one patient maintained for 600 days. Among the remaining patients, 25 died within 180 days.

Actuarial 6-month survival for all 133 patients was 75%, and 68% survived for 1 year. Most of the deaths occurred prior to hospital discharge, with only three patients dying during the period 4.5-12 months after their devices were placed. The most common causes of death were sepsis, stroke, and multiorgan failure. The most common adverse events were bleeding (41 patients), infections (37), ventricular arrhythmias (32), and renal failure (18). Five patients had to have their devices replaced, with one death linked to explantation.

While on the device, patients showed dramatic improvements in their heart failure status, their 6-minute walk distance, and their quality of life.

"What's most impressive was the survival rate after 4.5 months," when only three patients died, said Dr. Miller. In contrast, in the landmark, pivotal trial of the XVE model, the Randomized Evaluation of Mechanical Assistance for the Treatment of Congestive Heart Failure (REMATCH) trial, 52% of patients survived for 1 year and 25% survived for 2 years. When deaths immediately after surgery in the new trial are discounted, survival with the HeartMate II model looks to be about 20% better, in absolute terms, compared with the XVE model.

"If we can provide a 20% absolute difference in mortality [with HeartMate II], that would outdistance any medical therapy we have and it would be a tremendous change," Dr. Miller said during the conference call.

Another notable result was the units' reliability, with only five devices needing removal and only two developing thrombosis. "That's incredible performance," Dr. Miller said.

The much smaller size of the new model is another important factor. "You need one-seventh of the surgical dissection to create the pocket where the pump goes. That probably accounts for the reduced bleeding, and it's technically easier. My surgeons are looking forward to this.

"I don't honestly see any downside to the data. We saw a safety and efficacy profile that beat anything that's been published. We met the end point with success across the board," Dr. Miller said. ■