

Heart Transplant Waiting-List Risks Quantified

BY MITCHEL L. ZOLER
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BOSTON — Patients with three or more risk factors who were listed with the highest urgency for a heart transplant—status 1A—on the U.S. waiting list had at least a 30% risk of dying before a donor heart was available, based on actual experience during 2000-2006.

Records from the United Network for Organ Sharing (UNOS) for this period showed that when high-risk patients (defined as those with more than three risk factors for death) received a mechanical circulatory support device, their 90-day survival rate jumped from 50% to 89%, said Dr. Katherine Lietz, who presented an analysis of UNOS data at the annual meeting of the International Society for Heart and Lung Transplantation. When a ventricular assist implant is used this way, it's often called a "bridge-to-transplant" device.

"To bridge or not to bridge is one of the most challenging decisions for medically managed, high-urgency, status 1A patients" who are awaiting a heart transplant, said Dr. Lietz, a transplant cardiologist at Columbia University in New York. Three key factors enter into this decision: the patient's risk for dying while awaiting a donor heart, the chances for successfully receiving a transplanted heart, and the risk of complications from implantation with a mechanical circulatory support device.

To better document the first two factors, Dr. Lietz and her associates analyzed data collected on 1,755 patients who were listed with UNOS as status 1A candidates for a heart transplant during January 2000–December 2006.

During their first 30 days on the UNOS list, 14% of the patients died, 49% received a transplanted heart, 33% remained active on the list, and the remaining 4% were removed from the list because their status had improved.

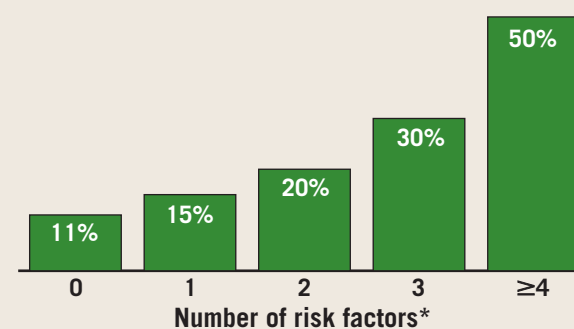
The investigators identified the following six clinical or demographic features that were significantly associated with an elevated risk for death during the first 30 days on the list: blood type O, age older than 60 years, ventilator support, intra-aortic balloon pump, serum creatinine greater than 1.5 mg/dL, and serum albumin less than 3.0 g/dL.

Further analysis showed that the risk of death increased in patients who had higher numbers of these risk factors. Patients with none of these risk factors had an 11% risk of dying while they were maintained on medical treatment during their first 30 days on the list. Mortality risk rates increased as the number of risk factors rose (see box).

A second analysis identified a non-O blood type and a body weight of 89 kg or less as the most important determinants of receiving a heart transplant during the first 30 days on the list. Patients who met both of these criteria had a 66% chance of receiving a heart during this period. Those with either one of these two factors had about a 50% chance, and patients without either factor had about a 23% chance of receiving a donated heart, Dr. Lietz said.

She stressed that patients and their physicians need to determine how these findings can be used to help guide

30-Day Mortality Risk Rates of Heart Transplant Patients Increase With Number of Risk Factors



*Risk factors are blood type O, age >60 years, ventilator support, intra-aortic balloon pump, serum creatinine >1.5 mg/dL, and serum albumin <3.0 g/dL.
Note: Based on data for 1,755 patients listed as status 1A candidates.
Source: Dr. Lietz

individual decisions about whether to rely on medical treatment alone or opt for implantation of a mechanical circulatory support device while a patient is listed and awaiting a heart. Dr. Lietz suggested that a reasonable cut-off might be a risk for dying of 30% or greater while listed, which corresponds to a patient's having three or more mortality risk factors.

The UNOS data showed that these patients stood to substantially boost their chances for survival if they received a mechanical circulatory support device. ■

Nonischemic Heart Transplant Candidates Get No ICD Benefit

BY MITCHEL L. ZOLER
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BOSTON — Patients with non-ischemic cardiomyopathy who received an implantable cardioverter defibrillator did not have a survival benefit while listed as status 2 for a potential heart transplant, compared with patients who did not have an implantable defibrillator, based on records from more than 2,500 U.S. patients who were listed during 2000-2005.

In contrast, patients with ischemic cardiomyopathy who had an implantable cardioverter defibrillator (ICD) while listed as status 2 for a heart transplant during the same period had a significant 6% absolute survival advantage compared with patients without an ICD during the same period, Dr. Katherine Lietz reported at the annual meeting of the International Society for Heart and Lung Transplantation.

The reason for this difference in the impact of ICDs on survival based on whether a patient's cardiomyopathy had an ischemic or nonischemic etiology is not clear, she said. In addition, this finding should not be viewed as a reason to not place ICDs in patients with nonischemic cardiomyopathy, said

Dr. Lietz, a transplant cardiologist at Columbia University in New York. Rather, the finding suggests that more research should be done to identify the determinants of survival in patients with nonischemic cardiomyopathy who are awaiting a heart transplant.

Her analysis focused on U.S. patients listed with the United Network for Organ Sharing as status 2 patients, defined as those who



Presence of an ICD did not affect the 3-year survival rate in status 2 patients with nonischemic cardiomyopathy.

DR. LIETZ

meet general criteria for a heart transplant, but are not "high urgency" status 1 patients.

During the period studied, use of ICDs in status 2 patients jumped more than twofold, rising from 37% in 2005 to 77% of listed status 2 patients in 2005, Dr. Lietz said. A total of 6,201 patients were listed as status 2 for a heart transplant in this period: 3,448 patients with ischemic-etiology cardiomyopathy and 2,753 patients with a nonischemic etiology. The vast majority (98%) of these pa-

tients who received an ICD had it implanted before they were listed for a heart transplant.

The 3-year survival rate of all patients with ischemic cardiomyopathy who had an ICD was 84%, compared with 76% among patients who did not receive an ICD. The researchers then ran the same analysis only on patients who remained on the list and did not receive a donated heart. In this subgroup, the 3-year survival rate with an ICD was 73.6%, and without an ICD it was 67.4%, a significant difference.

The 6.2% absolute improvement in survival over 3 years linked with ICD use was comparable with the survival benefit seen with ICD use in the Sudden Cardiac Death Heart Failure Trial (SCD-HFT), Dr. Lietz noted.

In contrast, among all patients with nonischemic cardiomyopathy who were listed as status 2, the 3-year survival rate with an ICD was 79.8%, compared with 81.2% among patients without an ICD, a "surprising" finding, said Dr. Lietz. This unexpected disparity remained among those who remained listed without a new heart. The survival rate was 65.7% with an ICD and 74.5% without an ICD, a difference that was not statistically significant, Dr. Lietz said. ■

Inflammation Possible Link Between Obesity and HF

The inflammatory markers interleukin-6 and C-reactive protein as well as macroalbuminuria are independently predictive of heart failure, according to a study that followed nearly 7,000 Americans for a median of 4 years.

Each standard deviation increase in serum interleukin-6 or CRP level raised the risk of heart failure (HF) by 50% and 38%, respectively, while the presence of macroalbuminuria increased the risk 4.3-fold (J. Am. Coll. Cardiol. 2008;51:1775-83).

These associations were strong "even after adjustment for established risk factors, LV [left ventricular] dysfunction, and interim MI," wrote Dr. Hossein Bahrami of Johns Hopkins University, Baltimore, and colleagues.

The community-based Multi-Ethnic Study of Atherosclerosis is a multicenter cohort study of 6,814 whites, blacks, Hispanics, and Chinese Americans with no history of symptomatic cardiovascular disease. Overall, 79 participants developed HF during the study period and 26 of those individuals (33%) had an interim MI. Participants who developed HF were more likely to be older, male, obese, and current smokers and to have hypertension and diabetes.

The presence of metabolic syndrome at baseline (seen in 35% of participants) more than doubled the risk of HF. Specifically, the absolute risk of HF in obese individuals was 16/1,000, compared with 10/1,000 in the nonobese. However, the association between obesity and incident HF was no longer significant after the model was adjusted to include the two inflammatory markers, they reported.

Very few participants (1.3%) had left ventricular ejection fraction (LVEF) below 50%, though 10% of participants had left ventricular hypertrophy (LVH) at baseline by Framingham criteria. Among the individuals who developed HF, rates of LVEF below 50% and LVH were 15% and 32%, respectively.

LVEF was the strongest predictor of incident HF and was therefore incorporated into the multivariate analysis. Among the 60 participants with LV function data at time of HF diagnosis, 87% had LVEF of 30% or greater, 65% had LVEF of 40% or greater, and 55% had LVEF of 50% or greater, the investigators wrote.

—Melinda Tanzola