

# LVH in Donor Does Not Raise Risk of Death

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION

SAN DIEGO – Cardiac transplant recipients who are given hearts from donors with left ventricular hypertrophy are not at increased risk of death, Dr. Omar Wever Pinzon reported at the meeting.

In a retrospective, nationwide study of

“Overall survival of recipients of donor hearts with LVH is similar to those without LVH, which indicates that the current donor selection and allocation algorithms successfully mitigate the risk that donor LVH could pose to recipient survival,” Dr. Pinzon said. However, “the combination of donor LVH with certain other high-risk characteristics can result in excess mortality.”

Because few donor hearts had moderate or severe LVH, “I think we have to be very cautious” when using those hearts, he added. But hearts having an interventricular septum and posterior wall thickness up to 1.3 cm “may be safe in the absence of other high-risk characteristics.”

The scarcity of donor hearts – coupled with growing knowledge about the impact of various donor characteristics on recipient outcomes – has led to strategies to make more hearts available for transplantation, according to Dr. Pinzon.

“Thanks to these strategies, patients with left ventricular hypertrophy, considered a high-risk characteristic, are more likely now to become donors,” he commented. However, some studies

have raised concerns that such hearts are more susceptible to ischemic graft injury, which could translate into poorer outcomes for the recipients.

Using data from the United Network for Organ Sharing and the Organ Procurement and Transplantation Network, the investigators studied 2,626 adult patients who underwent a first, single-organ heart transplantation in 2006-2010.

On the basis of the thickness of the interventricular septum and posterior wall, donor hearts were classified as having no LVH (less than 1.1 cm) or LVH that was mild (1.1-1.3 cm), moderate (1.4-1.6 cm), or severe (1.7 cm or greater).

The transplant recipients were 52 years old on average, and 78% were men. The donors were 33 years old on average, and 72% were men.

Fully 44% of the donor hearts had some degree of LVH, reported Dr. Pinzon of the UTAH (Utah Transplantation Affiliated Hospitals) Cardiac Transplant Program in Salt Lake City. The LVH was mild in most cases (38%) but occasionally moderate (5%) or severe (1%).

Relative to their peers who had been given donor hearts without LVH, recipients who had been given donor hearts with LVH had a higher body mass index and a higher ratio of donor-to-recipient BMI, had been on the waiting list for a shorter time, and were more likely to have a graft ischemic time exceeding 4 hours.

During a follow-up period of 3.3 years post transplantation, 13% of the recipients died or underwent retransplantation.

In univariate and multivariate analyses, neither recipients of donor hearts with mild LVH nor recipients of donor hearts with moderate or severe LVH were more likely to die than their counterparts whose donor hearts did not have any LVH, Dr. Pinzon reported.

However, recipients’ risk of death increased with the age of their donor (hazard ratio, 1.01) and with their own serum creatinine level (HR, 1.31) and mean pulmonary artery pressure (HR, 1.01).

Also, they were more likely to die if their donor had used tobacco (HR, 1.32), or if they themselves were older than 55 years of age (HR, 1.30) or had been on extracorporeal membrane oxygenation support (HR, 6.0).

Further analyses revealed an interaction between donor heart LVH and donor age. Of recipients whose donor was older than 55 years, those getting a heart with any LVH had roughly six times the risk of death. But there was no such association in recipients from younger donors.

There was also an interaction between donor heart LVH and graft ischemic time. Of recipients whose graft had an ischemic time of 4 hours or longer, those receiving a heart with moderate or severe LVH had twice the risk of death. ■

VITALS

**Major Finding:** Donor-heart left ventricular hypertrophy did not increase recipients’ risk of death overall. However, LVH did increase mortality risk when combined with either of two other high-risk characteristics: older donor age and longer graft ischemic time.

**Data Source:** A retrospective study of 2,626 adult patients who underwent heart transplantation between 2006 and 2010.

**Disclosures:** Dr. Pinzon reported that he had no relevant conflicts of interest.

more than 2,500 adults who underwent cardiac transplantation during 2006-2010, nearly half of the donor hearts had LVH.

Recipients who had been given hearts with LVH did not have poorer survival overall than did their counterparts who had been given hearts without this high-risk characteristic. But getting a heart with LVH did reduce survival if, in addition, the donor was older than 55 years or the graft had a longer ischemic time.

## Men Receiving Women’s Hearts Have Higher Mortality

BY SUSAN LONDON

FROM THE ANNUAL MEETING OF THE INTERNATIONAL SOCIETY FOR HEART AND LUNG TRANSPLANTATION

SAN DIEGO – For men undergoing heart transplantation, the sex of their donor may mean the difference between life and death, according to a pair of large retrospective cohort studies

The studies, which were reported at the meeting, each analyzed data from more than 60,000 recipients over periods spanning several decades.

Their conclusion: Men were more likely to die if they received a heart from a female donor vs. a male donor, with the elevation in risk largely resulting from excess deaths in the first year. Overall mortality was 13% higher for these men after potential confounders were taken into account.

In contrast, women undergoing heart transplantation had a similar risk of death regardless of whether their donor was male or female.

A possible explanation for this finding, according to Dr. Ingo Kaczmarek, a cardiac surgeon at the Transplantation Center Munich of Ludwig-Maximilians University of Munich and the lead investigator of one of the studies, is that women’s hearts are smaller than men’s, even given the same body height and weight (J. Am. Coll. Cardiol. 2002;39:1055-60).

Additionally, medication nonadherence may play a part. “In our population ... I can tell you that females take their medication and males don’t,” he said. “And that might be a big confounder that you can’t measure.”

Although her study took donor characteristics into

account, it is still possible that the smaller size of female hearts played a role, agreed Dr. Kiran K. Khush, lead investigator of the other study. “But I think there are probably also some immunological processes involved and sex differences that we don’t completely understand,” she added.

This new information helps explain why some patients fare better than others after heart transplantation, but it would not necessarily alter her practice, said Dr. Khush, a cardiologist and instructor in cardiovascular medicine at Stanford (Calif.) University.

“I would worry about it clinically, but I’m not sure that would preclude me from accepting a female graft for a male recipient, because – as we all know – when you have a very sick recipient who is in imminent danger of dying, you just want to have a heart for that patient,” she commented. However, she added, perhaps given a situation wherein several highest-priority patients on the waiting list were otherwise similar, sex matching might be something to consider.

Dr. Khush and her colleagues analyzed data from the International Society of Heart and Lung Transplantation (ISHLT) database for the years 1990-2008, restricting analyses to 60,584 adult recipients having at least 2 years of follow-up post transplantation.

Fully 79% of the heart transplant recipients were men. On average, the men were 52 years old and the women were 49 years old at the time of transplantation.

Men’s odds of acute rejection within 2 years of transplantation were higher if their donor was female vs. male before adjustment for more than a dozen potential confounders (odds ratio, 1.22), although not after-

ward. Women’s odds of this outcome did not differ by the sex of their donor.

The donor’s sex did not affect the likelihood of cardiac allograft vasculopathy for either group before adjustment. But afterward, men actually had a lower risk of this outcome if their donor was female (OR, 0.77).

In terms of the hard end point of death, results showed that men were more likely to die after transplantation if their donor was female vs. male, both before statistical adjustment (hazard ratio, 1.18) and afterward (HR, 1.13). The donor’s sex had no influence on this outcome in women.

Dr. Kaczmarek and his coinvestigators similarly analyzed data from the ISHLT database, but for a wider range of years (1980-2009). Their analyses were based on 67,833 heart transplant recipients.

Overall, 80% were men. On average, the men were 53 years old and the women were 51 years old. One-quarter of men received a female donor heart, and slightly fewer than one-half of women received a male donor heart.

The 15-year survival rate was best for women who were given a female heart and worst for men who were given a female heart. “The curves divide in the first year,” Dr. Kaczmarek pointed out. “In the long run, they seem to be parallel, but women with female hearts do a bit better.”

The 1-year rate of survival ranged from a low of 78% among men who were given a female heart to a high of 84% among men who were given a male heart. “This [latter] effect lasts for a few years, and then the better combination is female donor, female recipient,” he said.

Dr. Khush had no relevant conflicts of interest. Dr. Kaczmarek reported receiving travel or research grants from Novartis, Astellas, Roche, Orion Pharma, and Berlin Heart. ■



**The fact that women’s hearts are smaller than men’s even given the same body height and weight, may be a factor.**

DR. KACZMAREK