Donor Management Boosted Heart Procurement

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BOSTON – It seems counterintuitive, but when management times of potential heart and lung donors stretched beyond 20 hours, successful organ procurement rates at one center actually went up rather than down, investigators reported.

Among 42 donors managed for 20 hours or less, only six lungs (7% of possible total) and five hearts (12%) could be procured. In contrast, among 58 donors managed for more than 20 hours, 40 lungs (34%) and 26 hearts (45%) could be procured.

The surprising findings, from a prospective analysis of 100 consecutive organ donors, occurred despite the fact that there were no significant differences in attainment of preprocurement donor-management goals, said Dr. A. Britton Christmas of the surgery department at the Carolinas Medical Center, Charlotte, N.C.

A total of 133 organs, mean 3.2/donor, were obtained from donors managed 20 hours or less, and 243, mean 4.2/donor, from those managed for more than 20 hours (*P* less than .01). There was a mean of 2.6 organs transplanted for each donor managed 20 hours or less, and 3.7 for each managed for more than 20 hours (*P* less than .01).

"The general consensus is that early procurement removes the transplant organ from a hostile environment, but we believe that this study provides evidence to the contrary. Perhaps the reward really is worth the wait," Dr. Christmas said.

Their original hypothesis was that shorter management times would yield higher organ procurement and transplant rates in general and heart and lung transplants in particular.

The investigators collaborated with the organ procurement organization LifeShare of the Carolinas, which covers 40 hospitals in a 20-county region. The analysis consisted of data on 100 consecutive donors from 2007 through 2008 that included age, ethnicity, blood type, mechanisms of death, management teams, organs procured, organs transplanted, donor type, donor management, reasons for nonuse of organs, and donor management goals.

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Major Finding: A total of 34% of available lungs and 45% of hearts were successfully procured from donors managed for more than 20 hours, compared with only 7% of lungs and 12% of hearts from donors managed for 20 hours or less.

Data Source: Prospective study of 100 consecutive donors in a regional organ procurement program.

Disclosures: The study was internally funded. Dr. Christmas disclosed no conflicts of interest.

Causes of death were traumatic brain injury in 44 donors, cerebrovascular accident or stroke in 38, anoxic brain injury in 13, and other in 5.

The management goals included mean arterial pressure (60-100 mm Hg), central venous pressure (4-10 mm Hg), pH (7.30-7.45), PaO_2 (greater than 100 mm Hg), serum sodium (155 mEq/L or less), serum glucose (less than 150 mg/dL), and urine output (0.5-0.3 mL/kg per hour).

Although heart and lung procurement rates were significantly higher for donors managed for longer times, there were no significant differences between less than 20 hours vs. more than 20 hours in terms of the percentage of kidneys (85% and 91%, respectively) or livers (90% in each group) successfully harvested.

There were also no significant differences between the time groups in any of the preprocurement management goals.

The study was limited by the use of data from a single organ procurement organization, small sample size, and lack of data on the exact time of brain death, Dr. Christmas acknowledged.

The investigators speculated that the longer interval between brain death and organ procurement might permit the improvement of in situ graft function and might promote the procurement of some organs initially deemed unsuitable. ■