Impact of Donor Coronary Artery Disease on Recipient Outcomes in Heart Transplantation

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Objective: There continues to be a shortage of donor hearts for transplantation with a persistent one-year waitlist mortality of 32%. Efforts to expand the donor pool have included the use extended criteria donors (e.g. advanced age or comorbid conditions). Another potential avenue are donor hearts with pre-existing coronary artery disease (CAD).

Methods: A retrospective cohort study was performed using the Organ Procurement and Transplantation Network database between 10/1/1987-12/3/2020. Patients were excluded for redo heart transplantation, multiple transplanted organs, a transplant type other than orthotopic, or were missing donor CAD field. Postoperative complications, graft failure, and survival were examined between recipients of donor hearts with abnormal (CAD donor) versus normal (non-CAD donor) coronary angiogram. Angiograms were designated abnormal if there were any irregularities noted on the report, irrespective of the degree of CAD. Analysis was performed in unmatched cohorts as well as after propensity score matching (PSM) with 883 patients in each group.

Results: A total of 12,813 heart transplant recipients were identified, of which 986 (8%) had an abnormal donor coronary angiogram. There were no differences between CAD and non-CAD donor groups in acute rejection, stroke, or dialysis prior to discharge, or treatment for rejection <1 year. However, recipients with CAD donor had a greater pacemaker incidence than recipients with non-CAD donor (4.9% vs 3.5%, P=0.027). There was no difference in 10-year freedom from graft failure (54.6% vs 55.5%, P=0.573) or cumulative survival (54.7% vs 55.6%, P=0.512) between CAD and non-CAD donor groups. After PSM each group had a good balance on model factors, and there were no differences in perioperative outcomes or treatment for rejection <1 year. There was no difference in 10-year freedom from graft failure (55.5% vs 58.4%, P=0.527) or cumulative survival (55.8% vs 58.7%, log rank=0.14, P=0.711) between CAD and non-CAD donor groups (Figure).

Conclusions: While this study is limited by the details and distribution of donor CAD, its presence may not be a contraindication to transplantation. Carefully selected donor hearts with CAD may have equivalent outcomes to those without CAD for appropriately selected recipients. Further study in this area may expand the donor pool.

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