Correlation of donor characteristics with transplant coronary artery disease as assessed by intracoronary ultrasound and coronary angiography

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Abstract
The mechanisms responsible for transplant coronary artery disease (CAD) and its predisposing factors remain incompletely understood. The influence of donor characteristics as predisposing factors has not been studied systematically. We examined the correlation of donor demographic, clinical, and immunologic parameters with transplant CAD assessed by both intracoronary ultrasound (ICUS) and coronary angiography in 116 heart transplant recipients (age 44.7 ± 12.0 years) studied 3.4 years (range 1.0 to 14.6) after transplantation. Quantitative ultrasound data were obtained by calculating mean intimai thickness from several distinct coronary sites. Coronary angiograms were categorized visually as normal or showing any transplant CAD. By multivariate regression analysis, donor undersize of > 20% of recipient weight ($p < 0.02$) and duration after transplantation ($p < 0.005$) were independently correlated with the amount of ICUS intimai thickness ($r = 0.36$, $p = 0.0007$), and older donor age with angiographic evidence for the disease ($r = 0.34$, $p < 0.006$). In a subgroup analysis of the 39 patients studied 1 year after transplantation, white donor race ($p < 0.05$), fewer human leukocyte antigen-DR mismatches ($p < 0.002$), shorter ischemic time ($p < 0.04$), and donor smoking history ($p < 0.02$) were independent predictors for severity of ICUS intimai thickening ($r = 0.92$, $p = 0.0009$); higher donor age ($p < 0.006$) and higher arterial partial pressure of oxygen ($p < 0.003$) were independent predictors for angiographic disease ($r = 0.67$, $p < 0.002$). In conclusion, donor characteristics may contribute to the probably multifactorial pathogenesis of transplant CAD.