Title

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810 Cardiac Transplantation: Rejection and Remodeling

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11:45 a.m.

810-6 Vascular Remodeling Patterns One Year After Cardiac Transplantation.

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Background: The contribution of vascular remodeling and intimal hyperplasia as a cause for luminal narrowing in cardiac allograft vasculopathy (CAV) is controversial. The purpose of this study was to evaluate the relationship between vascular remodeling, intimal hyperplasia and luminal narrowing one year after orthotopic heart transplantation (OHT).
Methods and results: Serial intravascular ultrasound data was obtained in 190 recipients at baseline and at one year after OHT. We matched 625 segments from 190 coronary arteries between studies one year apart. In each segment, lumen area (LA), external elastic membrane area (EEM area), and intimal area (IA) were calculated. In the first year post-OHT, the coronary artery LA decreased by 5.7%(ΔLA=-0.78±2.91mm^2,p<0.0001) and the IA increased by 39.6%(ΔIA=0.74±1.76mm^2, p<0.0001), but the average EEM area did not change significantly (ΔEEM area=-0.04±2.71mm^2, p=0.7). In segments with a decrease in LA of >10% there was a significant decrease in EEM area (ΔEEM area=-2.09±2.55mm^2, p<0.0001) and an increase in IA (ΔIA=1.42±2.27 mm^2, p<0.0001). In segments with a LA increase of >10%, the EEM area increased significantly (ΔEEM area=2.75±2.30 mm^2, p<0.0001) but the IA did not change significantly (ΔIA=0.14±1.20 mm^2, p=0.2). Of the 625 segments, 52% had no remodeling, 25% were dilated and 23% had EEM shrinkage in the presence of variable intimal growth (ΔIA=0.73±1.70mm^2 p<0.0001; ΔIA=1.23±2.02mm^2, p<0.0001; ΔIA=0.20±1.40mm^2, p=0.09, respectively). In 76% of arteries, segments showed discordant remodeling patterns (positive and negative remodeling within different segments of the same artery).
Conclusions: In the first year after OHT, remodeling occurs in 48% of segments and the majority of coronary arteries had discordant remodeling patterns. In segments with lumen loss, the contribution of change in EEM area was greater than that of intimal thickening. Compensatory enlargement (positive remodeling) is associated with intimal growth, but vessel shrinkage (negative remodeling) is not directly linked to any decrease in intimal hyperplasia. These results support the hypothesis that the decrease in EEM area is due to the inflammatory process of CAV.