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Authors

Li, HY
Tanaka, K
Anzai, H
[et al.](#)

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1104 Cardiac Transplantation:
Basic and Clinical

Monday, March 07, 2005, 1:30 p.m.-5:00 p.m.
Orange County Convention Center, Hall E1
Presentation Hour: 3:30 p.m.-4:30 p.m.

1104-165 Influence of Donor Transmitted Atherosclerosis on the
Development of Cardiac Allograft Vasculopathy

Haiyan Li, Koji Tanaka, Hitoshi Anzai, Brandy Oesser, Jon Kobashigawa, Jonathan M. Tobis, University of California at Los Angeles, Los Angeles, CA

Background: Following orthotopic heart transplantation (OHT), coronary artery disease is a combination of donor transmitted atherosclerosis and new lesions that develop to produce cardiac allograft vasculopathy (CAV). This study evaluated the influence of pre-existing donor lesions on the development of CAV.

Methods: Intravascular Ultrasound imaging was performed in 301 recipients at 1.3±0.6 months and again at 12.2±0.8 months after OHT. 1103 segments were matched from 333 coronary arteries between studies 1 year apart. In each segment, maximum intimal thickness (MIT), lumen area (LA), external elastic membrane area (EEM area) and intimal area (IA) were measured. Segments with MIT ≥ 0.5mm at baseline were defined as donor lesions (DL). New lesions (NL) were defined as lesions with ΔMIT ≥ 0.5mm at 1 year and baseline MIT <0.5mm.

Results: The mean donor age was 29.6±12.7 years old and 197 segments from 95 arteries in 89(30%) hearts demonstrated DL. At 1 year after OHT, 16% of recipients with DL exhibited an increase ≥ 0.5mm in MIT (progression of DL); 78% had a change <0.5mm in MIT; 6% had a decrease ≥ 0.5mm in MIT (regression of DL); and 10.1% of recipients with DL developed NL. Of the 333 arteries, 16 segments had progression of DL and 51 segments had NL; 18 of 67 segments came from 14 of 95 (15%) arteries with DL, and 49 of 67 segments came from 36 of 238 (15%) arteries without DL (p=0.9). Lumen loss and intimal growth in NL were greater than in DL (ΔLA: -3.5±2.7mm² vs -0.89±3.0mm², p<0.0001; ΔIA: 4.5±2.1mm² vs 0.54±2.1mm², p<0.0001). For the same degree of increase in IA (ΔIA: 4.5±2.1mm² vs 4.1±2.8mm², p=0.6), the NL tended to have vessel enlargement (ΔEEM area=0.93 ± 2.6mm², p=0.01), and the segments with progression of DL had no significant change in EEM area (ΔEEM area=0.10±2.0mm², p=0.8). The presence of NL was similar in arteries with and without progression of DL (14.3% vs 8.6%, p=0.6).

Conclusion: In the first year after OHT, DL do not act as a nidus for further intimal growth and may not be as susceptible to CAV as segments without DL. The presence of a DL also does not accelerate intimal thickening elsewhere in the artery. The presence of DL may impede compensatory positive remodeling as intimal thickening progresses.