Incidence of Coronary Artery Vasculopathy Has Decreased with Modern Immunosuppression: Insights from Clinical Trials in Organ Transplantation

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**Introduction**

**Purpose:** A non-randomized, prospective, multi-center, observational clinical trial in cardiac transplant (CT) recipients was conducted. We sought to determine alloimmune biomarkers associated with coronary artery vasculopathy (CAV) and the frequency of CAV. Intravascular ultrasound (IVUS) was utilized to analyze CAV at one month and one year after CT. In a 2003 report by Eisen HJ the incidence of CAV in CT pts immunosuppressed with steroids, azathioprine or everolimus, and cyclosporine ranged from 30% to 50%. (1) In this historical cohort of 634 pts ~50% received induction and the 1 year rate of rejection ranged from 21.3 to 45.8%.

**Aims**

- To make serial IVUS measures in de novo heart transplant recipients.
- To compare conventional IVUS measures with volumetric measures
- To compare IVUS measures with biomarkers

**Methods**

In the current study 54 CT pts were enrolled from 2007-2010 and followed for 1 year, mean age 52.5 (21-75) yrs, 20% female, 83.3% white. Induction received in > 52%. Tac/MMF maintenance in 75.9%, CSA/MMF 11.1. IVUS was performed at 12 centers at baseline and 1 year after CT, baseline mean 48.4 days, and follow up mean 370.2 days. Automatic pullback in the LAD using branch point landmarks; analyses performed by a core lab at Cleveland Clinic.

**Results**

54 patients had adequate baseline and 1 year IVUS exams with matched coronary segments suitable for exam and were analyzed by the core lab. Statin use in 72.2%, hypertension in 18.5%, diabetes in 27.8%, ischemic etiology 31.5%, mean donor age 31.2 years. BMI >30 in 20.4%.

CAV with maximal intimal thickness (MIT) change >=0.5mm maximum 38% with class I or II antibodies compared to 33% without CAV; p value chi square 0.82.

**Conclusions**

- The incidence of rapidly progressive CAV has diminished over the past decade to ~20%.
- Conventional IVUS measures correlate with PAV which is a robust but currently unvalidated surrogate for CAV outcomes.
- Comprehensive biomarker analysis is ongoing but the current data do not support a causal relationship between alloantibodies and CAV.

**References**