

Incidence and severity of transplant coronary artery disease early and up to 15 years after transplantation as detected by intravascular ultrasound

**Journal of the American College of Cardiology, Volume 25, Issue 1,
January 1995, Pages 171-177**

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Abstract

Objectives

The purpose of this study was to quantify the severity of transplant coronary artery disease and to assess lesion characteristics early and up to 15 years after heart transplantation by using intracoronary ultrasound.

Background

Intravascular ultrasound has the ability to measure the components of the arterial wall and has been shown to be a sensitive method for detection of transplant coronary artery disease.

Methods

A total of 304 intracoronary ultrasound studies were performed in 174 heart transplant recipients at baseline and up to 15 (mean 3.3 ± 0.2) years after transplantation. Mean intimal thickness and an intimal index were calculated, and lesion characteristics (eccentricity, calcification) were assessed for all coronary sites imaged (mean 3.0 ± 0.1 sites/study). The Stanford classification was used to grade lesion severity.

Results

Compared with findings in patients studied at baseline (<2 months after transplantation, n = 50), mean intimal thickness (0.09 ± 0.02 vs. 0.16 ± 0.02 mm, $p < 0.01$), intimal index (0.07 ± 0.01 vs. 0.14 ± 0.02 , $p < 0.01$) and mean severity class (1.5 ± 0.2 vs. 2.3 ± 0.2 , $p < 0.01$) were significantly higher at year 1 (n = 52) after transplantation. Thereafter, all three variables further increased over time and reached highest values between years 5 and 15. Calcification of lesions was detected in 2% to 12% of studies up to 5 years after transplantation, with a significant increase to 24% at years 6 to 10 ($p < 0.05$).

Conclusions

Severity of transplant coronary artery disease appeared to progress with time after transplantation in this cross-sectional study. This characteristic was most prominent during the 1st 2 years after transplantation, whereas calcification of plaques occurred to a significant extent only later in the process. These data may serve as a reference for comparison of

intravascular ultrasound findings in other studies of patients with transplant coronary artery disease.