

Prognostic Importance of Intimal Thickness as Measured by Intracoronary Ultrasound After Cardiac Transplantation

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Abstract

Background

Although intracoronary ultrasound (ICUS) has been validated for the early detection of transplant coronary artery disease (TxCAD), the prognostic importance of findings detected by this new imaging technique is unknown.

Methods and Results

This study examined the relation of clinical outcome in 145 heart transplant recipients (mean age, 45.1±11.1 years) with the amount of intimal thickness measured by ICUS during routine annual coronary angiography 1 to 10 years (mean, 3.1±2.2 years) after transplantation. From published autopsy data, a mean intimal thickness of >0.3 mm was considered significant. During a mean follow-up time of 48.2±10.2 months, 23 deaths (12 cardiac) occurred, and 6 patients required retransplantation. Angiographic TxCAD developed in 22 of 125 patients (17.6%) in the subgroup with normal angiograms at the time of ICUS and a follow-up annual angiographic study. In the total population and the subgroup, mean intimal thicknesses of >0.3 and ≤0.3 mm, respectively, were associated with significantly inferior 4-year actuarial overall survival (73% versus 96%, P=.005; 72% versus 92%, P=.05), cardiac survival (79% versus 96%, P=.005; 80% versus 98%, P=.04), and freedom from cardiac death and retransplantation (74% versus 98%, P<.0001; 70% versus 96%, P=.001). In addition, ICUS predicted freedom from development of subsequent angiographic TxCAD in the subgroup that was initially normal (26% versus 72%, P=.02). A mean intimal thickness by ICUS of >0.3 mm was associated with inferior clinical outcome regardless of the presence of angiographic TxCAD and predicted the development of subsequent angiographic TxCAD. Despite significantly longer duration after transplantation, higher rejection incidence, and lower average daily cyclosporine dose, none of these covariates were independent risk factors for outcome.

Conclusions

These findings confirm the prognostic importance of mean intimal thickening of >0.3 mm in heart transplant recipients and suggest that these patients should be candidates for early interventional strategies.

Keywords

Ultrasonics, coronary disease, transplantation, prognosis