Prediction of angiographic disease by intracoronary ultrasonographic findings in heart transplant recipients

Authors

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Abstract

Background

Intracoronary ultrasonography has proven to be a more sensitive test than angiography for the detection of intimal thickening in transplant recipients. However, the prognostic significance of the intimal thickening detected by intracoronary ultrasonography has not been proven.

Method

During a 1-year period, 70 transplant recipients without angiographically apparent coronary artery disease underwent intracoronary ultrasonography examination. For each intracoronary ultrasonography study an intimal index, defined as the ratio of the plaque area to the area within the media, was measured for the most diseased segment imaged. The subsequent annual follow-up angiograms of these 70 patients were reviewed for the development of visually apparent coronary artery disease. The time since transplantation for the 70 patients without angiographically apparent coronary artery disease ranged from 1 to 15 years, with a mean of 4.2 years an median of 3.9 years. Mean duration of angiographic follow-up was 2.0 years (range 1 to 3 years).

Results

Angiographically apparent coronary artery disease developed on follow-up angiograms in 13 of the 70 patients, with a mean time to development of 1.5 years. Four of 46 patients (9%) with an intimal index < 0.3 subsequently had angiographically apparent coronary artery disease, whereas of 25 patients (36%) with an intimal index > or = 0.3 subsequently had angiographically apparent coronary artery disease. Odds ratio for future angiographically apparent coronary artery disease between patients with an intimal index > or = and intimal index < 0.3 was 5.9 (p < 0.01 by Fisher's Exact test). In a subgroup of 22 patients more than 5 years after transplantation at the time of intracoronary ultrasonography, 12 had an intimal index < 0.3 and 10 had an intimal index > or = 0.3. In this subgroup none of the 12 patients with an intimal index < 0.3 had angiographically apparent coronary artery disease and only 1 of the 10 with an intimal index > or = 0.3 had angiographically apparent coronary artery disease (difference not significant).

Conclusions

The presence of moderate to severe intimal thickening by intracoronary ultrasonography is predictive of the future development of angiographically apparent coronary artery disease among patients more than 1 year and less than 5 years after transplantation. This same degree of intimal thickening may not carry the same prognostic significance among patients greater

than 5 years after transplantation without the development of angiographically apparent coronary artery disease.