

# Exercise echocardiography in heart transplant recipients: a comparison with angiography and intracoronary ultrasonography

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## **Abstract**

Transplant coronary artery disease is the leading cause of allograft failure in heart transplant recipients surviving beyond 1 year. Coronary angiography still remains the major technique for surveillance of these patients, with recent use of intracoronary ultrasonography to detect the early stages of intimal thickening. We evaluated exercise echocardiography to screen for the presence or absence of angiographic evidence of transplant coronary artery disease in any vessel, defined as follows: absent; stenosis 39% or less = mild; stenosis 40% to 69% = moderate; or stenosis  $\geq$  70%, or more = severe. Fifty-one consecutive heart transplant recipients undergoing routine annual evaluation were included in the study. Of thirty-seven patients with no coronary artery disease, thirty-two had a normal and five had an abnormal exercise echocardiogram. Fourteen patients (27%) had transplant coronary artery disease by angiographic criteria; six had mild, six had moderate, and two had severe stenosis. One patient with mild and the two patients with severe transplant coronary artery disease had abnormal exercise echocardiograms. None of the patients with moderate disease had an abnormal exercise echocardiogram (false negative). Of forty-three patients with no or mild stenosis, 19 patients had moderate to severe intimal proliferation as seen with intracoronary ultrasonography. Of eight patients with moderate or severe stenosis, four were tested with intracoronary ultrasonography and all had moderate to severe intimal proliferation. Six patients had a "false positive" exercise echocardiogram, and of four who were tested with intracoronary ultrasonography, two had mild and two had moderate to severe intimal thickening. In summary, exercise echocardiography correctly excluded the presence of transplant coronary artery disease in 86% of patients but was associated with a high false negative rate for detection of moderate coronary stenosis. A false positive exercise echocardiogram was associated with intimal proliferation by intracoronary ultrasonography in several patients and suggests that coronary angiography may underestimate significant coronary artery disease.

## **Keywords**

Echocardiography, transesophageal, intensive care, aortic dissection, emboli, endocarditis, hypotension