



ECG of the Month

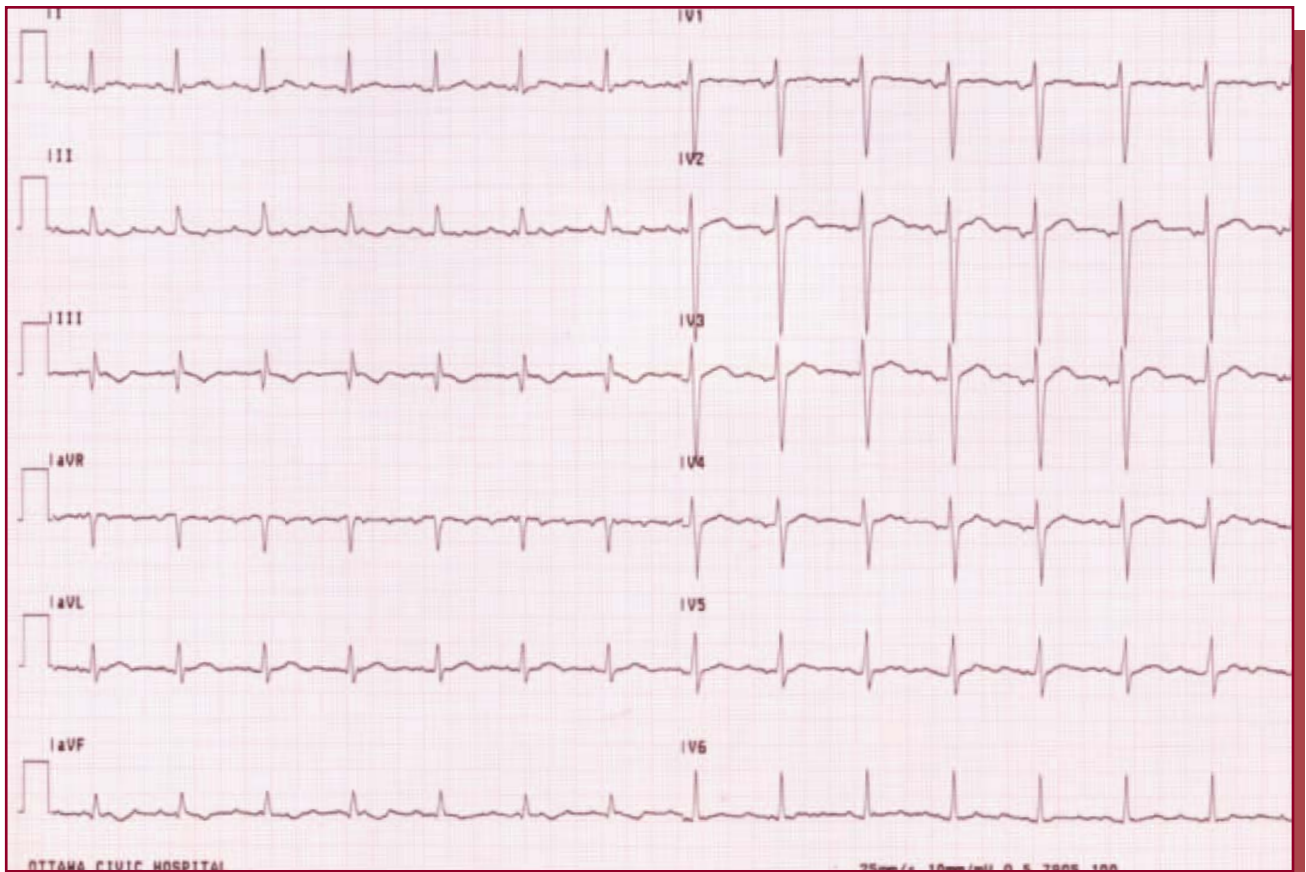
University of
Ottawa Heart Institute

Prepared by Saad Mahmoud, MD; and Martin Green, MD, FRCPC

The Atrial Double-Cross?

This is the ECG of a 56-year-old man undergoing a routine followup after a heart transplant.

What is the diagnosis? _____





ECG of the Month

This Month's ECG Diagnosis


This ECG shows an atrial rhythm of 87 beats per minute (bpm) conducted 1:1 to a narrow complex QRS with fixed PR interval. This is best seen in precordial leads V1, V2, and V3. There is no sinus arrhythmia present.

In addition, regular atrial activity at a rate of about 300 bpm is seen, particularly in leads II, III and aVR. The morphology is positive in I, II and negative in aVR, consistent with origin from the right atrium. There is no clear association between the two atrial rhythms.

In orthotopic heart transplant, the posterior portion of both native atria are left in place (with their attachment to the vena cavae and pulmonary veins). The donor heart is placed in the corresponding position with the donor sinus node still present.

The native right atrium is in atrial flutter at 300 bpm. The atrial flutter is not conducted either to the donor atria or ventricles. The donor atria are in sinus rhythm

and conduct normally to the ventricles at 87 bpm.

Atrial arrhythmias in post-heart transplant patients are being recognised more frequently. They are related to either the surgical procedure or progression of underlying cardiomyopathy. The surgical scar usually prevents them from conducting to the donor atria, though late recovery of conduction across the scar is sometimes seen.¹ The presence of atrial arrhythmias, such as fibrillation or flutter, may be difficult to diagnose even on the ECG. Anticoagulation may be indicated in some circumstances. 

Reference

1. Birnie D, Tang AS, Green MS, et al; Interatrial conduction of atrial tachycardia in heart transplant recipients: potential pathophysiology. *J of Heart & Lung Transplantation* 2000; 19(10):1007-10.