Dual tachycardia in the setting of amiodarone-induced hyperthyroidism

Marcos Daccarett, Nathan M. Segerson, J. Peter Weiss, and John D. Day*

Arrhythmia Service, Utah Heart Clinic, LDS Hospital, 324 Tenth Avenue, Suite 206, Salt Lake City, UT 84103, USA

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A 65-year-old male with dilated cardiomyopathy (left ventricular ejection fraction 30%) presented with incessant wide complex tachycardia (WCT). His history included paroxysmal atrial fibrillation treated chronically with amiodarone.

WCT was refractory to intravenous amiodarone and required multiple cardioversions. Doubt as to the origin of this WCT was raised when 2:1 atrial flutter (AFL) was seen (Figure 1). However, the second half of this tracing demonstrated the onset of WCT with the persistence of a dissociated AFL. Further evaluation revealed hyperthyroidism.

The diagnosis of simultaneous ventricular tachycardia (VT) and AFL is favoured by the fusion beat at the onset of VT (arrow). Also, change of AFL with 2:1 AV conduction to AFL with 1:1 AV conduction (the main differential diagnosis in this case) would be expected to shorten the ventricular cycle length by ‘about half’ (some rate accommodation to the change in haemodynamics is expected). In this case, the abrupt change in ventricular cycle length from 420 to 260 ms strongly suggests that the WCT is ventricular rather than conducted.

Amiodarone-induced hyperthyroidism probably contributed to this dual tachycardia.

Figure 1 Transition from atrial flutter to ventricular tachycardia with evidence of a fusion beat (arrow).