Simultaneous spontaneous onset of ventricular tachycardia and termination of atrial fibrillation

Faizel Osman*, Ross Ward, and Adrian Morley-Davies

Department of Cardiology, City General Hospital, University Hospital of North Staffordshire NHS Trust, Stoke on Trent ST4 6QS, UK

Received 5 November 2007; accepted after revision 10 December 2007; online publish-ahead-of-print 18 January 2008

A 72-year-old man with previous myocardial infarction and severe left ventricular systolic dysfunction was admitted with fast ventricular tachycardia (VT) requiring emergency electrical cardioversion. Coronary angiography demonstrated three-vessel coronary artery disease, but no targets for revascularization. He had a dual-chamber cardioverter defibrillator implanted (Medtronic Maximo DR7278), programmed with a ventricular fibrillation (VF) zone above 320 ms (188 bpm) set to deliver maximum output shocks (36 J) and a VT zone between 450 and 320 ms (150–188 bpm) set to monitor

Figure 1 Tracing taken from the implantable cardioverter defibrillator showing spontaneous termination of atrial fibrillation on the atrial electrogram and simultaneous spontaneous onset of fast ventricular tachycardia.

* Corresponding author. Tel.: +44 1782 55305.
E-mail address: F.osman@bham.ac.uk

Published on behalf of the European Society of Cardiology. All rights reserved. © The Author 2008. For permissions please email: journals.permissions@oxfordjournals.org.
only; supraventricular tachycardia (SVT) discriminators were turned on.

Three weeks later, his device discharged without warning while he was awake. On device interrogation, he had several episodes on non-sustained VT and paroxysmal atrial fibrillation (PAF) with appropriate suppression of defibrillator therapies because of SVT discriminators for the latter. Diagnosis of the shock episode revealed an episode of PAF (for which therapy was correctly withheld) which terminated spontaneously at exactly the same time as an episode of fast VT commenced (Figure 1). The VT was within the VF zone and shock therapy was delivered. The device was reprogrammed to incorporate a burst of anti-tachycardia pacing for fast VT and warfarin was commenced for PAF.

Spontaneous termination of AF and onset of fast VT is unusual. This may simply have been a coincidence, and if not the mechanism is difficult to explain. Tachycardia induced tachycardia is well known and AF may have 'induced' the VT but it is not clear why AF should terminate at the same instant, even if AF had induced the VT. Avoiding the episodes of AF may reduce the number of VT episodes, particularly, in patients with severe left ventricular impairment.