Irregular tachycardia: what is the mechanism? Part I

Laurent Roten* and Hildegard Tanner

Department of Cardiology, Inselspital, Bern University Hospital, and University of Bern, Switzerland

* Corresponding author. Tel: +41316322111; fax: +41316321414. E-mail address: laurent.roten@insel.ch

Case presentation

A 43-year-old man was referred because of symptomatic, repetitive, supraventricular, premature beats, and non-sustained tachycardia. Prior anti-arrhythmic drug trials with metoprolol, flecainide, sotalol, and amiodarone had failed to improve the symptoms.

The 12-lead ECG is shown in Figure 1. Recordings from a catheter placed at the His-bundle and in the coronary sinus are shown in Figure 2. Programmed atrial stimulation could not be performed due to very frequent, spontaneous, premature beats. During rapid atrial pacing up to a cycle length of 340 ms, 1:1 atrioventricular conduction was observed with an AH interval of 220 ms. Ventricular pacing resulted in ventriculoatrial dissociation. With administration of isoproterenol, sinus rhythm accelerated with less frequent, premature beats, as seen in Figure 3.

Questions

What is the origin and the mechanism of the arrhythmia?
Is the antegrade AV conduction altered?

Figure 1 An 12-lead ECG.
Figure 2 Recordings from leads I, II, III, V₁, and V₆ and electrograms from a catheter placed at the His-bundle and a catheter placed in the coronary sinus.

Figure 3 Recordings from leads I, II, III, V₁, and V₆ and electrograms from a catheter placed at the His-bundle and a catheter placed in the coronary sinus during isoproterenol infusion.