IMAGES IN CARDIOLOGY

"Warm-up" and "Cool-Down" Phenomenon

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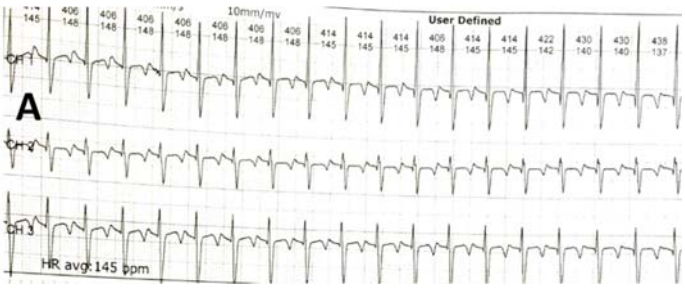
Abstract

A 14-year-old was diagnosed with recurrent bouts of narrow-QRS complex tachycardia displaying the phenomenon of "warm-up" and "cool-down" that aided in the differential diagnosis. ***Rhythmos 2017;12(3):52.***

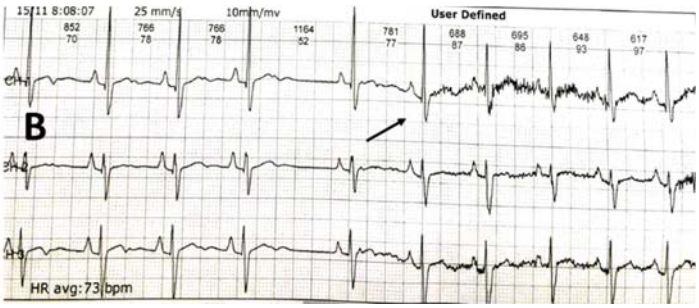
Key Words: automatic atrial tachycardia; supraventricular tachycardia; long RP tachycardia; electrophysiology study

Abbreviations: AV = atrioventriocular

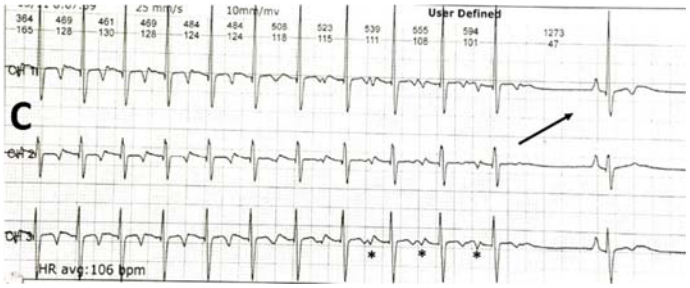
A 14-year-old lad complained of fatiguability over the last few months. When examined, runs of tachycardia were detected by auscultation and an ambulatory 24-hour ECG recording was ordered. This confirmed the occurrence of several self-terminated episodes of supraventricular tachycardia with a wide range of heart rates (130-190 bpm). A typical recording is presented in **panel A**, where a narrow QRS tachycardia can be seen without perceptible fluctuation in the rate, averaging about 145 bpm.



However, in **panel B**, one can see a progressive rate increase upon initiation of a tachycardia ("warm-up" phenomenon).



On the other hand, in **panel C** the spontaneous termination of the tachycardia displayed in panel A is captured, showing a typical "cool-down" phenomenon of gradual slowing of the tachycardia rate before cessation. During the rate slowing one can now discern the P waves (asterisks), which were previously merging with the T wave and could not be clearly distinguished. Thus, a long RP tachycardia is diagnosed which though terminates with VA or intra-atrial block (no discernible P wave after the last QRS complex).



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The differential diagnosis of a long RP tachycardia includes atypical (fast-slow) atrioventricular nodal reentry tachycardia (AVNRT), orthodromic atrioventricular reciprocating tachycardia with retrograde conduction via an accessory pathway with decremental properties (permanent junctional reciprocating tachycardia – PJRT), and atrial tachycardia. [1] These are also the tachycardias which may produce tachycardiomyopathy, which is reversible upon ablation of the arrhythmia.[2] In most cases an electrophysiology study is needed for the correct diagnosis.[3,4] Among the three types, only atrial tachycardia is independent of the AV node and continues in presence of AV block. However, in the absence of this ECG finding, typical gradual initiation ("warm-up") and termination ("cool-down") without the influence of premature impulses characterize automatic atrial tachycardia.

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