
---

**Pacemaker-mediated tachycardia in an unconventional resynchronization device**

Vedran Velagić*, Richard Matasić, and Maja Čikeš

Department of Cardiovascular Medicine, University of Zagreb School of Medicine and University Hospital Centre Zagreb, Kilićevića 12, Zagreb 10000, Croatia

* Corresponding author. Tel: +385 91 7929284; fax: +385 1 2367512, E-mail address: vvelagic@gmail.com

A 67-year-old male with dilated cardiomyopathy and permanent atrial fibrillation was admitted due to decompensated heart failure. Standard medical therapy failed to control high ventricular rates which aggravated the heart failure. Therefore, atrio-ventricular-node ablation was performed and a biventricular pacemaker was implanted. Instead of a CRT device, we implanted a DDD pacemaker with the left ventricular (LV) lead in the atrial channel. After the implant, frequent paroxysms of wide QRS tachycardia with the rate of 130 b.p.m. occurred (Figure A).

Interrogation of the device revealed that the tachycardia cycle length was exactly at the upper tracking rate limit, and the intermittent sensing of T waves in the atrial channel was detected (Figure B). When a sensed event occurs after the post-ventricular atrial refractory period (PVARP), right ventricle pacing is triggered. That explains the different morphology of the tachycardia QRS complex. High standard sensing parameters in the atrial channel, combined with high amplitude T waves detected by the LV lead, caused an endless-loop tachycardia. The problem was solved by decreasing the sensitivity in the atrial channel and by prolonging the PVARP.

This off-label application of DDD devices can result with an unusual mechanism of a pacemaker-mediated tachycardia. DDIR mode can also be used to avoid this problem.

The full-length version of this report can be viewed at: [http://www.escardio.org/Guidelines-&-Education/E-E%280%93learning/Clinical-cases/Electrophysiology/EP-Case-Reports](http://www.escardio.org/Guidelines-&-Education/E-E%280%93learning/Clinical-cases/Electrophysiology/EP-Case-Reports).