Overestimation of Atrial Tachyarrhythmia Detection in Pacemaker Patients with High Cumulative% of Atrial Pacing

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Background: Although atrial high rate episodes (AHRE) have been commonly used to detect atrial tachyarrhythmias (AT/AF) in pacemaker patients, its reliability and characteristics are unclear. Methods and Results: 39 patients with implanted dual chamber pacemakers (mean age 79.7±6.6 years), who had no history of AT/AF and were programmed in the setting of AHRE at >190 beats/min in DDD mode, were studied. An atrial overdrive pacing (AOP) algorithm was randomly programmed “ON” in 19 and “OFF” in 20 patients. AHRE were detected in 20 patients (51%), consisting of AT/AF in 15 and repetitive non-reentrant ventriculoatrial synchrony (RNRVAS) in 8 patients, all included in the AOP “ON” group. A total of 257 of 1,528 episodes of AHRE were available for analysis, including 181 and 76 episodes in the AOP “ON” and “OFF” groups, respectively. Among 181 episodes in the AOP “ON” group, 72 (40%) were RNRVAS, whereas all episodes in the AOP “OFF” group (100%) were AT/AF. Detection of RNRVAS was closely associated with a high cumulative% atrial pacing. The specificity of AT/AF detection by AHRE was 40% when the AOP algorithm was activated, vs. 100% when not in use. Conclusions: AT/AF was common in pacemaker patients without a history of AT/AF. The increase in cumulative% atrial pacing and the use of an AOP algorithm might be closely associated with RNRVAS, non-AT/AF, detected by AHRE.

Keywords: pacemaker, atrial tachyarrhythmias, atrial high rate episodes