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A Case of Pacemaker Syndrome Mimicking a Heart Failure Exacerbation

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A Case of Pacemaker Syndrome: Mimicking a Heart Failure Exacerbation

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Introduction

When a pacemaker's battery reaches a threshold low, it goes into ERI (elective replacement indicator) mode to conserve the remaining battery life and signal replacement. In dual chamber medtronic devices, ERI mode is defined as a switch from dual chamber pacing to ventricular pacing, specifically VVI mode. Atrial paced patients who suddenly switch to VVI mode can experience symptoms of fatigue, dyspnea, chest pain, malaise as a result of the non physiologic nature of ventricular pacing. Here, we discuss a patient who's pacemaker switched to ERI mode and developed pacemaker syndrome.

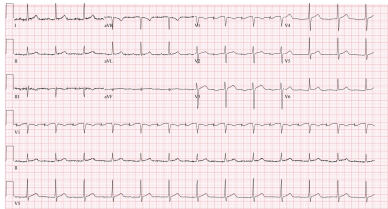


Figure 1. Previous EKG from two months prior demonstrating atrial pacing

Case Presentation

positioned pacemaker leads. EKG showed a regular rate with a ventricular paced rhythm. Serial Troponin I were <0.04 and BNP was <400. Transthoracic echocardiogram showed preserved ejection fraction, no regional wall motion or valvular abnormalities. Throughout his stay, telemetry demonstrated near 100% ventricular pacing; despite the presence of two leads, there was no evidence of atrial tracking. His PPM was interrogated and found with be in VVI mode, formerly end of life (EOL) mode. The battery was exchanged with complete resolution of presenting symptoms.

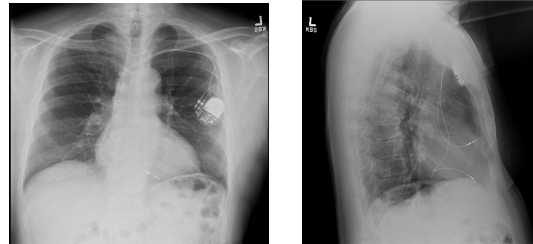


Figure 2. EKG on admission, Ventricular pacing

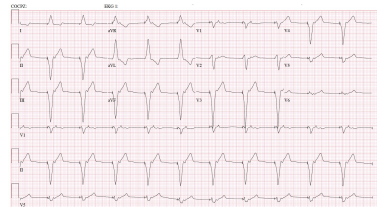


Figure 3. Chest xray on admission, without fluid overload

Conclusion

Medtronic dual chamber pacemakers reach a threshold low battery voltage termed ERI (elective replacement indicator) mode where the device switches from a dual mode of functionality to a single mode (VVI). The sudden switch from atrial-ventricular synchrony to dyssynchronous ventricular-only pacing can cause intense cardiac symptoms, including chest pain, shortness of breath and a feeling of doom. Understanding this not uncommon setting can help avoid a battery of unnecessary cardiac testing for such patients.

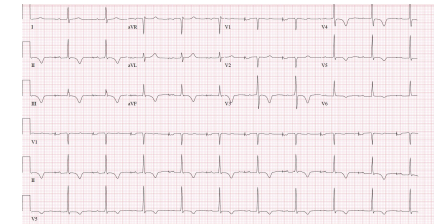


Figure 4. EKG post generator exchange, atrial pacing.

Case Presentation

A 70 year old male with hypertension, hyperlipidemia, and sick sinus syndrome with a dual-chamber medtronic pacemaker (2012) presented with dyspnea on exertion with associated orthopnea, chest tightness, and generalized fatigue. Differentials included pulmonary embolism, acute exacerbation of congestive heart failure, and acute coronary syndrome. On physical exam he was clinically euvolemic. Chest xray was without cardiomegaly, pulmonary vascular congestion nor pleural effusions and demonstrated properly

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