UNIQUE PRESENTATION OF A HEART FAILURE PATIENT

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HISTORY OF PRESENT ILLNESS (HPI) A 58 year old male presented to an Emergency Center after experiencing increasing dyspnea, fatigue, and chest pain during the previous week. The patient had a history of congestive heart failure (CHF) but was not on any relevant medications. He had a history of colon cancer which was successfully treated with radiation and a potentially cardiotoxic chemotherapy drug five years previous to this emergency.

PHYSICAL EXAMINATION The patient was experiencing acute chest pain. His EKG showed atrial flutter with 2:1 conduction resulting in a ventricular rate of 150 beats per minute (BPM) and a left bundle branch block (LBBB). His blood work was remarkable for an elevated troponin level of 14.56. He also displayed clinical symptoms of CHF.

He was transported to a tertiary care facility by helicopter for emergent cardiac catheterization.

STUDIES/RESULTS Cardiac catheterization was performed and revealed no significant occlusions or evidence of coronary artery disease (CAD). His left ventricular ejection fraction (LVEF) was determined to be 20%. During the study, his EKG displayed normal sinus rhythm (NSR).

The patient was hospitalized and medically treated for his heart failure symptoms. On telemetry, he had one run of nonsustained, wide complex tachycardia, with evidence of A-V dissociation suggesting a ventricular origin.

IMPRESSIONS/PLAN Electrophysiology was consulted due to the initial presentation of atrial flutter and the nonsustained tachycardia. It was determined that the atrial arrhythmia likely contributed to the patient's worsening CHF symptoms.

The patient underwent a successful atrial flutter ablation. During the procedure, he was not inducible for a ventricular arrhythmia in the EP lab.

The goal was to optimize his medical therapy to reduce the patient's heart failure symptoms and his medical regimen included: Losartan, spironolactone, furosemide, carvedilol, esomeprazole, ASA, amlodipine, and warfarin.

The patient was discharged home on day six. In addition to medications, the patient was prescribed a wearable cardioverter defibrillator (WCD), (manufactured by ZOLL, Pittsburgh, PA, marketed under the brand name LifeVest®).

He was scheduled to have his ejection fraction reevaluated in three months. If at that time his LVEF remained ≤35%, an ICD would be considered for permanent SCA protection.

CLINICAL UPDATE The patient's LVEF was reevaluated and, despite optimal medical management, it was determined that his EF had not improved. He was scheduled to be implanted with a cardiac resynchronization device (CRT-D).

The evening before implantation surgery the patient lost consciousness at home while working on his computer. The WCD appropriately detected a polymorphic VT at a rate of 298 BPM (see Figure 1), and

delivered a 150J biphasic treatment shock 41 seconds after detection. The treatment successfully converted his arrhythmia to a NSR at a rate of 77 BPM. The patient woke his wife, who was sleeping in another room, to call 911. He met the ambulance outside his house, and he was taken to the hospital for evaluation.

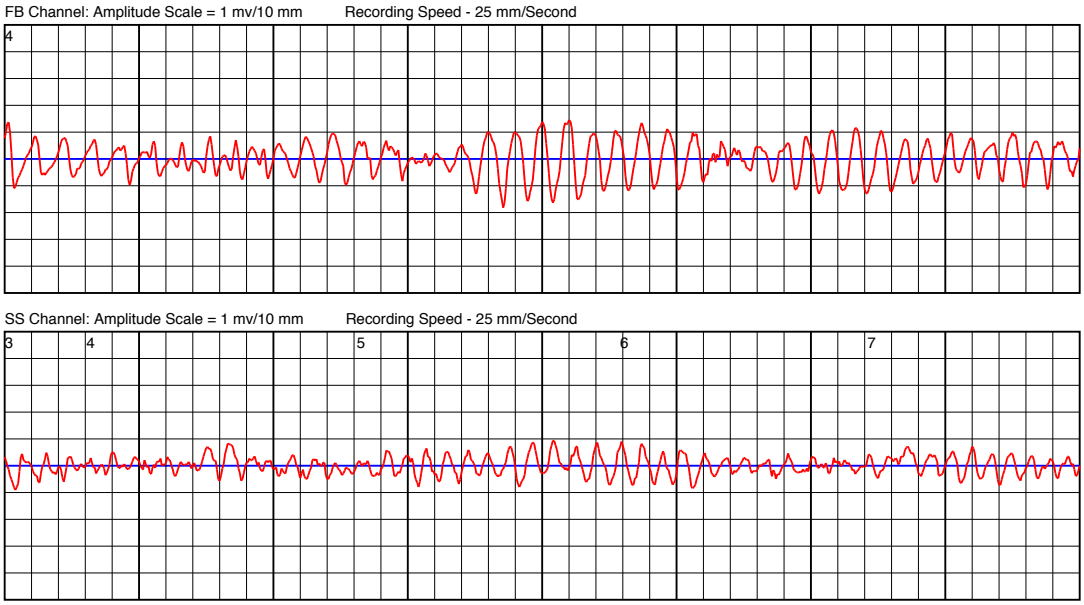

Figure 1: EKG downloaded from WCD. The WCD continuously monitors the patient's EKG using a 4 electrode, 2 lead system -front-to-back (FB, top) and side-to-side (SS, bottom)

The patient received a cardiac resynchronization device (CRT-D) implant the following day. During device testing, the patient initially failed defibrillation threshold testing and subsequently had a subcutaneous (SQ) array implanted. The implantation of the SQ array successfully provided an adequate defibrillation safety threshold.

The patient returned home and has since returned to his full time employment as a state corrections officer. He has not required defibrillation therapy from his device.

DISCUSSION Treating the heart failure patient can be made more difficult due to unique presentations of symptoms. In this case study, the patient was initially flown to the cardiac catheterization laboratory due to test results and symptoms. No evidence of CAD was discovered. Despite a successful atrial flutter ablation procedure and three months of optimizing medical therapy, the patient's EF did not improve significantly. During the medical therapy optimization period, the patient was at risk for SCA and was protected with a WCD. The patient is now on optimized medical therapy and has been implanted with a CRT-D device. He has returned to work without further heart failure or SCA episodes.

Written by Dr. Norman Marcus with support from ZOLL.

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