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# CardioSource WorldNews

*News and Views  
from the World  
of Cardiology*

## Presentation of Ischemic Cardiomyopathy with Complex Coronary Artery Disease

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### CASE STUDY



## History of Present Illness (HPI)

A 50-year-old male presented to his cardiologist's office for a scheduled nuclear stress test and reported complaints of increasing chest pain. He was transferred to the ER after his electrocardiogram (ECG) revealed abnormalities prior to the nuclear stress test. The patient had a complex history of coronary artery disease (CAD) including multiple coronary artery bypass grafts (CABG) and numerous coronary artery stents. He had a non-ST elevated myocardial infarction (NSTEMI) 4 months prior to presentation. Additionally, the patient had a history of hypertension, hyperlipidemia, asthma, reactive airway disease (RAD), chronic obstructive pulmonary disease (COPD), and diabetes. He was on a variety of medications to manage his condition, including dual antiplatelet therapy.

## Social History

The patient is married with three children.

## Physical Examination/Labs

The physical examination revealed diminished breath sounds with no wheezes or crackles. The patient's heart rate was noted as normal with a regular rhythm. No edema or jugular venous distention were noted. The patient was awake, alert, and had no appearance of acute distress.

**COMPLETE BLOOD COUNT:** WBC 8.6; RBC 4.65; hgb 14.3; hct 40.6; MCHC 35.2; MCV 87; platelets 105

**BASIC METABOLIC PANEL:** sodium 137; potassium 3.8; chloride 106; CO<sub>2</sub> 26; glucose 214; BUN 18; creatinine 1.19

**OTHER:** magnesium 2.0; calcium 8.3; albumin 2.9; alkaline phos 75; AST 21; ALT 24; bilirubin 0.6; INR 1.0; protime 13.4

**CARDIAC ENZYMES:** CK total 140; troponin 0.16

## Studies/Results

The patient's chest x-ray revealed mild cardiomegaly without pulmonary vascular congestion. His ECG demonstrated anterior STT changes not consistent with a STEMI. An echocardiogram revealed an ejection fraction (EF) of 25-30% with abnormal diastolic function. Cardiac catheterization revealed severe native CAD, reduced left ventricular systolic function, restenosis of the proximal left anterior descending artery stent, and a new total occlusion of the left circumflex artery, which had a full metal jacket stenting previously. The computed tomography angiography exam was negative for pulmonary embolism.

## Impressions/Plan

The patient was diagnosed with ischemic cardiomyopathy and was started on medical therapy for congestive heart failure (HF) and instructed to continue dual antiplatelet therapy. The patient was also diagnosed with new onset thrombocytopenia. The patient

was diuresed over the next several days. Given the patient's low EF and obstinate coronary arteries, he was identified as a potential candidate for an implantable cardioverter defibrillator (ICD) and possibly a left ventricular assist device (LVAD) if his symptoms did not improve with medical therapy.

It was determined that the patient's low EF put him at an elevated risk of sudden cardiac death (SCD). The patient was prescribed a wearable cardioverter defibrillator (WCD; manufactured by ZOLL, Pittsburgh, PA, marketed under the brand name LifeVest®) for 4 months and discharged on day 6.

## Clinical Update

Five weeks later, the patient took his son to the movies for his son's 15<sup>th</sup> birthday. In the lobby of the movie theater, the patient became dizzy and suddenly lost consciousness. The WCD detected ventricular fibrillation (see FIGURE 1) and delivered a 150J biphasic treatment shock 46 seconds after detection. The treatment successfully converted his arrhythmia and he awoke moments later. The paramedics arrived and transferred the patient to the hospital. The patient went on to receive a dual chamber ICD for long-term protection from SCD. He returned home to his wife and children.

## Discussion

In this case study, a patient with a complex history of CAD presented for a scheduled nuclear stress test with complaints of increasing chest pain. A physical examination along with routine tests revealed the diagnosis of ischemic cardiomyopathy. The patient's discharge plan included medical optimization in an attempt to improve his left ventricular function.

Medical optimization can take 3 months or more to impart mortality benefits in newly diagnosed HF patients.<sup>1</sup> While medications are being up-titrated, HF patients are at high risk of mortality, including sudden cardiac death.<sup>2</sup>

To address the increased risk during medical therapy optimization, the patient was prescribed a WCD. The WCD proved to be a critical part of the continuum of care for this patient providing a life-saving treatment during an episode of ventricular fibrillation only 5 weeks after discharge. ■

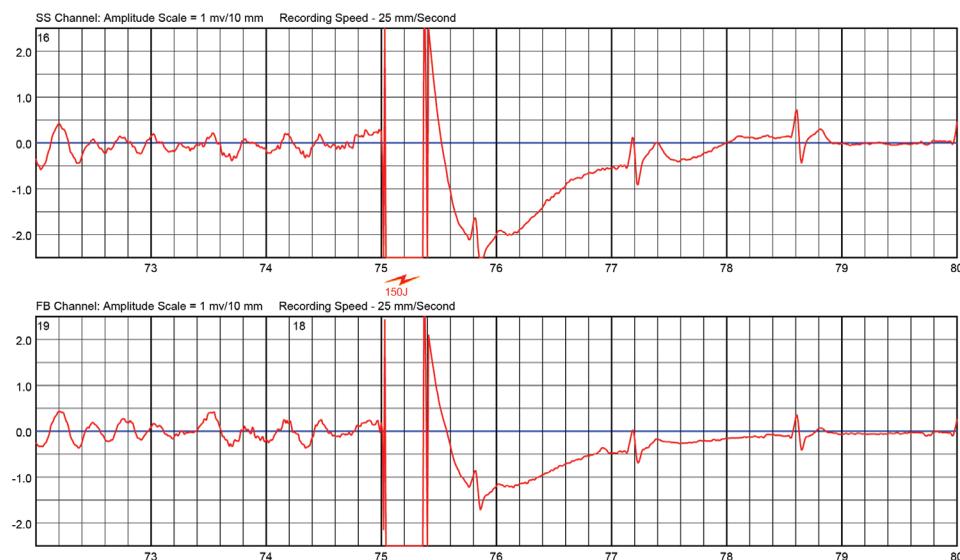


FIGURE 1 ECG downloaded from WCD. The WCD continuously monitors the patient's ECG using a 4 electrode, 2 lead system – side-to-side (SS, top) and front-to-back (FB, bottom)

1. MERIT-HF Study Group. *Lancet*. 1999;353:2001-07.  
2. Solomon SD, et al. *N Engl J Med*. 2005;352:2581-88.