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A LEAD YOU CAN'T MISS: A CASE OF RIGHT VENTRICULAR PERFORATION

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Case Report

A 65-year-old male with a biventricular implantable cardioverter defibrillator (ICD) placed 1 month prior presented from an outside hospital with chest pain and shortness of breath. Echocardiography showed a perforation of his right ventricular (RV) free wall by the ICD lead complicated by a moderate pericardial effusion (Figure 1; Video 1). The RV lead was noted to be in the pericardial space, suggesting lead migration/ perforation (Figure 2). A pericardial window was placed, and pericardiocentesis was performed via a subxiphoid approach with removal of approximately 1,500 cc of bloody fluid. The RV lead was unscrewed under fluoroscopy and repositioned, lead parameters were confirmed, and the device was returned to the pocket. The patient tolerated the procedure well. Follow-up transthoracic echocardiogram (Figure 3) revealed resolution of the pericardial effusion and the pericardial drain was removed. The patient was discharged home after recovery.

Delayed lead perforation is defined as migration and perforation at least one month after implantation. A rare complication, the incidence has been reported at 0.1–0.8% in permanent pacemaker and 0.6–5.2% in ICD implantations, respectively.[1,2] The pathophysiology is unclear, however two mechanisms have been proposed. The first involves direct mechanical lead perforation of the myocardium during implantation, while the second proposes an excessive immune response of the visceral pericardium leading to post-implantation pericarditis. Both mechanisms would suggest potential association with the level of tissue injury incurred at the time of device implantation, supporting efficacy to cautious monitoring. Importantly, the clinical presentation of these patients ranges from no symptoms to cardiac tamponade.[3] Early recognition and appropriate treatment of complicating pericardial effusions are essential, with pericardiocentesis and/ or pericardial window if necessary. The most commonly employed therapeutic approach is surgical removal, although successful percutaneous lead extraction with stand-by cardiothoracic surgery has been widely reported. Additionally, lead repositioning without extraction, as with our patient, has been reported.

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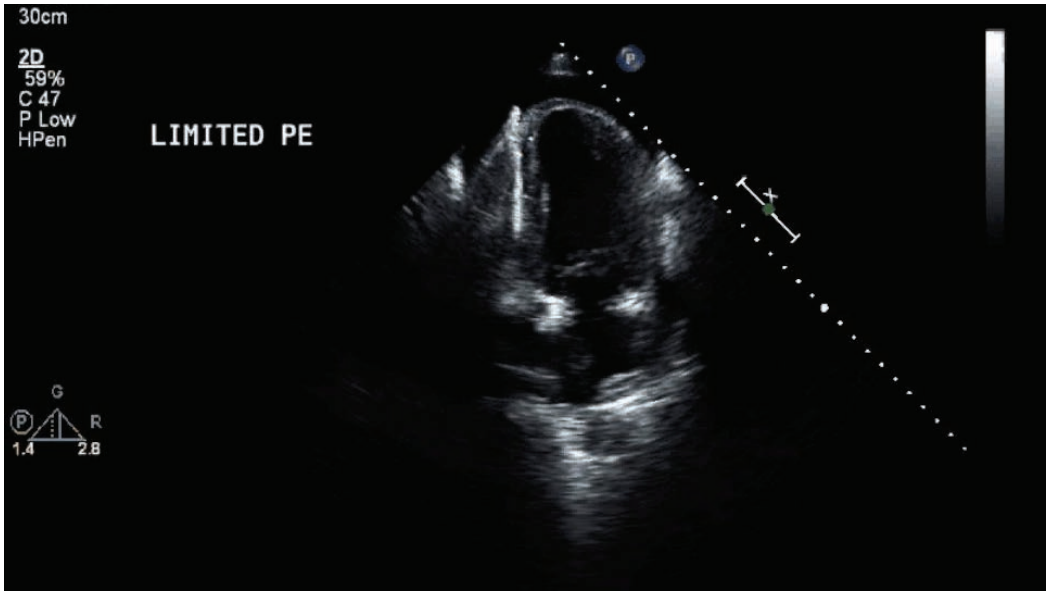

Figure 1. Transthoracic echocardiogram. Apical 4-chamber view revealing distal right ventricular free wall perforation.

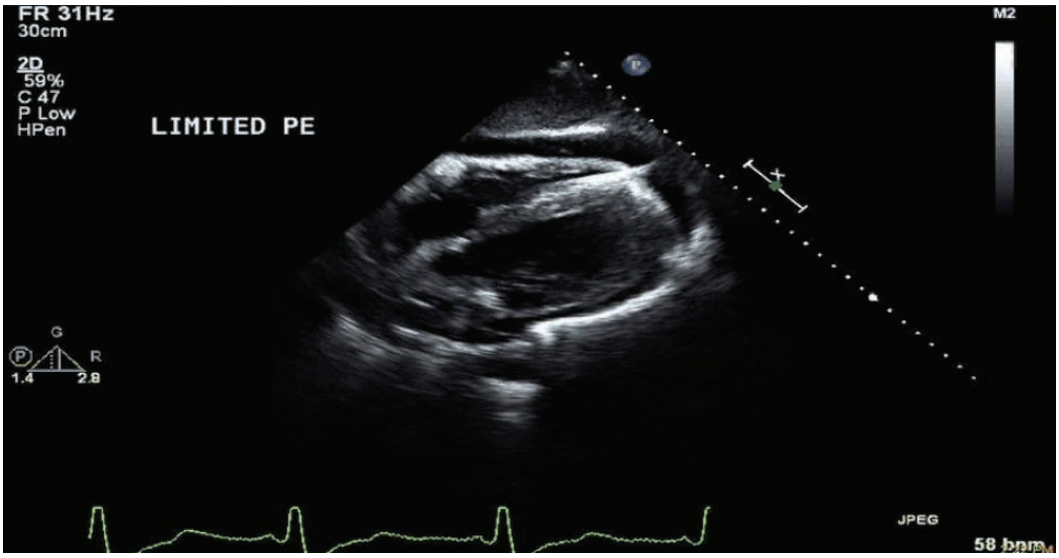

Figure 2. Transthoracic echocardiogram. Subcostal view demonstrating lead perforation.

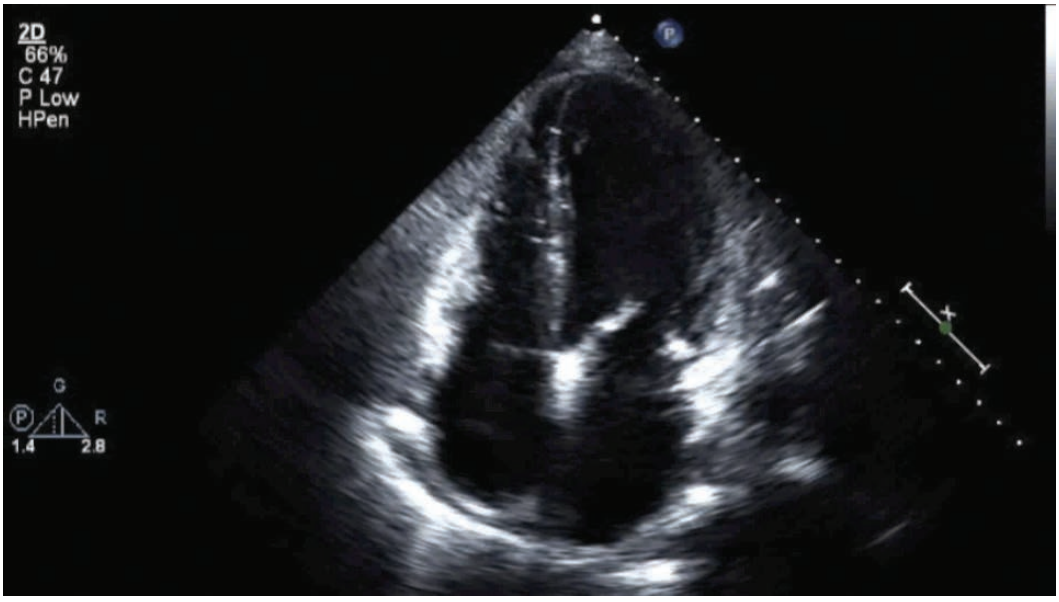

Figure 3. Transthoracic echocardiogram. Apical 4-chamber view after pericardiocentesis.

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