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AN UNUSUAL CAUSE OF DYSPHAGIA: PERICARDIAL EFFUSION AFTER IMPLANTABLE CARDIOVERTER-DEFIBRILLATOR PLACEMENT

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☐ **Abstract—Background: Dysphagia is a known complication of pericardial effusions. Most cases of pericardial effusions are idiopathic, infectious, and neoplastic, but can also occur after cardiac procedures. Objective: To report the case of a patient who developed dysphagia from a sub-acute pericardial effusion caused by the placement of an implantable cardioverter-defibrillator (ICD). Case Report: A 62-year-old woman presented to the Emergency Department (ED) with a 2-day history of dysphagia. Imaging revealed a large pericardial effusion compressing the esophagus from the mid-thoracic level to the gastroesophageal junction. Ten days prior, a dual-chamber ICD with small-diameter active fixation leads was placed in the patient. There had been no apparent complications from the procedure, however, over this 10-day period she developed a sub-acute pericardial effusion from an incidental perforation during ICD lead placement that led to the extrinsic compression of the esophagus and her presenting symptom of dysphagia. The patient underwent pericardiocentesis for the pericardial effusion and she was discharged in stable condition. Conclusion: This case report highlights the importance of recognizing a non-cardiac complaint such as dysphagia as the primary symptom of a critical cardiac condition. With an increase in cardiac procedures anticipated, clinicians should consider the possibility of a pericardial effusion as a cause of dysphagia, especially for those patients with recent cardiac procedures.** © 2012 Elsevier Inc.

☐ **Keywords—dysphagia; pericardial effusion; implantable-cardioverter defibrillator; ICD; pacemaker; active fixation lead; perforation**

INTRODUCTION

Pericardial effusion is associated with many conditions including infectious pericarditis, neoplasms, uremia, autoimmune disease, and hypothyroidism (1–3). Symptoms of large pericardial effusions are wide ranging and can include cough, dyspnea, chest pain, hiccups, hoarseness, and gastrointestinal symptoms (1–3). More specifically, pericardial effusion can cause gastrointestinal symptoms by stimulation of the diaphragm and vagus nerve (1). The literature reports a patient who presented with intractable vomiting due to an idiopathic pericardial effusion and another case report describing progressive dysphagia in an elderly woman over a 1-year period that was caused by a chronic pericardial effusion (4,5). We present a case of acute dysphagia caused by a sub-acute pericardial effusion resulting from incidental perforation from an implantable cardioverter-defibrillator (ICD) lead placement.

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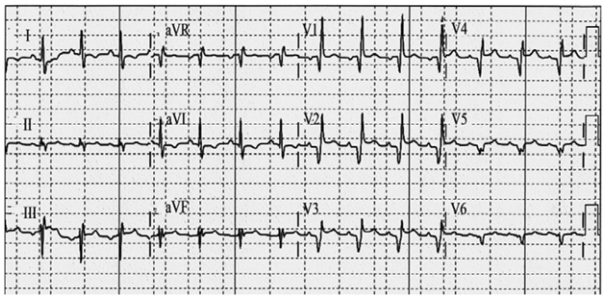

Figure 1. Electrocardiogram showing normal sinus rhythm with persistent ST elevation in the lateral leads suggestive of left ventricular anterior wall aneurysm.

CASE REPORT

A 62-year-old woman presented to the Emergency Department with a 2-day history of difficulty swallowing solids. She complained of repetitive coughing, nausea when supine, fever, headache, and a sharp substernal pain. She denied shortness of breath, diaphoresis, palpitations, abdominal pain, vomiting, dizziness, and any urinary symptoms. Ten days prior, a dual-chamber ICD (Model V-243, St. Jude, Sylmar, CA) had been placed in the patient due to dilatated cardiomyopathy with an ejection fraction of 35% that qualified her for primary prevention of sudden cardiac death. Two small-diameter active fixation ICD leads were placed through the left brachiocephalic vein, with one lead placed in the right atrial appendage and the other lead placed in the right ventricular apex. At the time of placement, no apparent complications were noted.

The patient's medical history was significant for coronary artery disease complicated by an anterior myocardial infarction (MI) and left ventricular dysfunction. She also had a remote left middle cerebral artery infarction, and type 2 diabetes mellitus treated with insulin. The patient denied tobacco, alcohol, and illicit drug use.

The patient's vital signs on arrival were: temperature of 36.7 °C (98.2°F), pulse of 91 beats/min, blood pressure of 116/72 mm Hg, respiratory rate of 28 breaths/min, and an oxygen saturation of 97% on room air. The physical examination also revealed decreased breath sounds bilaterally and paresis of the right upper and lower extremities. Cardiovascular examination revealed normal heart sounds without murmurs, gallops, or rubs. There was no jugular venous distension, and peripheral pulses were full bilaterally. There was no pulsus paradoxus present. The rest of the physical examination was unremarkable. The patient's laboratory values revealed a white blood cell count of 8.6 $\times$ 10^9/uL, hemoglobin of 10.6 mg/dL, platelet count of 309,000/L, sodium of 136 mEq/L, potassium of 4.3 mEq/L, blood urea nitrogen of 37 mg/dL, and creatinine of 1.6 mg/dL.

An electrocardiogram showed sinus rhythm with an old anterior MI without electrical alternans (Figure 1). A chest X-ray study with posteroanterior and lateral views was performed, which demonstrated cardiomegaly with a suggestion of a pericardial effusion (Figure 2). A computed tomography (CT) scan illustrated a large pericardial effusion wrapping around the esophagus posteriorly near the gastroesophageal junction (Figure 3A). It also showed complete obstruction and compression of the esophagus at the mid-thoracic level (Figure 3B). However, there was no demonstrable migration of either lead in the pericardial space on the CT scan. After consultation with a cardiologist, the patient had a transthoracic echocardiogram, which confirmed a large pericardial effusion without tamponade (Figure 4). The patient underwent placement of a pericardial catheter and approximately 400 mL of bloody fluid was aspirated. The catheter was removed the next day and a repeat echocardiogram (not shown) demonstrated no recurrence of the pericardial effusion. The patient's symptoms of dysphagia resolved and she was discharged in stable condition.

DISCUSSION

Posterior compression of the esophagus by the massively dilatated left atrium has been shown to cause dysphagia (6). Such dilatation of the left atrium is most commonly seen from mitral valve stenosis caused by rheumatic heart disease. However, with the incidence of rheumatic heart disease significantly diminished, dysphagia caused by cardiac abnormalities has become rare, and dysphagia is not often associated with cardiac disease.

Pericardial effusion is a common finding in many patients, especially in those with heart failure, valvular disease, and after cardiac surgery (7). These effusions may be due to a transudate, exudate, or hemopericardium (7). Many effusions resolve spontaneously, but if large enough, can lead to pericardial tamponade, which is classically characterized by Beck's triad of hypotension, jugular venous distension, and pulsus paradoxus. Patients may also present with chest pain and shortness of breath due to the compression of the heart. Treatment is geared toward the underlying cause, if known. However, immediate treatment includes removal of pericardial fluid via pericardiocentesis as well as hemodynamic stabilization with fluid resuscitation (8).

The most likely cause of the sub-acute pericardial effusion in our patient was an incidental perforation from an ICD lead placement, a known complication reported to range from 0.6% to 5.2% for this procedure (9–11). Hirschl et al. even reported a perforation rate of 12% and 7% for active fixation lead placement in the right atrium and right ventricle, respectively, in asymptomatic patients (12). Also, the most common