

Left Ventricular Pacemaker Wire through Patent Foramen Ovale

Abstract

A 53-year-old male status post pacemaker placement three months prior for sinus bradycardia presented with worsening dyspnea, holosystolic murmur, and a ventricular-paced right bundle branch block on electrocardiogram. Transesophageal echocardiography demonstrated a pacer wire in the right atrium coursing into the left atrium and ventricle through an undiagnosed patent foramen ovale. The patient underwent surgical repair and repositioning of the pacemaker lead without complication. Although rare, it should be suspected after recent lead placement.

Keywords: Pacemaker lead, patent foramen ovale, transesophageal echocardiography

Introduction

A 53-year-old male presented with a chief complaint of worsening dyspnea on exertion, easy fatigability, and occasional palpitations. He stated that his symptoms started 3 months earlier after a pacemaker implant for sinus bradycardia at an outlying hospital. On physical examination, a holosystolic murmur was noted in the fourth left intercostal space radiating to the axilla, and decreased breath sounds bilaterally. Heart rate was 90 beats per minute, blood pressure 142/86 mmHg. A ventricular paced right bundle branch block pattern was noted on electrocardiogram. Standard anteroposterior chest X-ray demonstrated small bilateral pleural effusions without obvious lead misplacement. Transesophageal echocardiography demonstrated a pacer wire in the right atrium coursing into the left atrium and then into the left ventricle, associated severe mitral regurgitation due to physical prevention of leaflet coaptation from the lead, and a normal ejection fraction [Figures 1-3 and Videos 1, 2]. It was ascertained to be a DDD pacemaker with right atrial lead migration across a patent foramen ovale and mitral valve to the left ventricle with pacing present only in the right ventricular lead and without atrial lead capture. The patient underwent successful mitral valve repair with repositioning of the pacemaker lead.

Discussion

Inadvertent left ventricular placement of a

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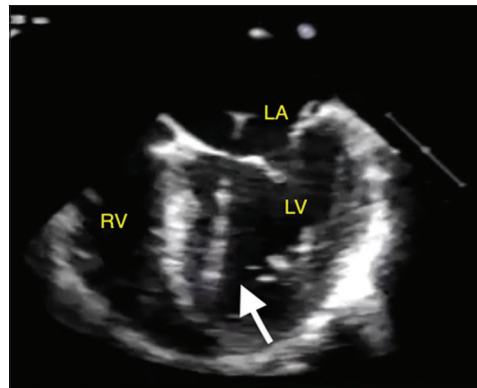


Figure 1: Transesophageal echocardiogram mid-esophageal four-chamber view demonstrating a pacer wire in the left atrium and left ventricle (arrow). LA: Left Atrium, LV: Left Ventricle, RV: Right Ventricle

pacing wire through a patent foramen ovale is uncommon, but several reports exist.^[1] Leads can end up inside the left ventricle by passing through an unrecognized atrial septal defect, patent foramen ovale, ventricular septal defect, or by perforating the interventricular septum. Vascular access through the axillary or subclavian artery and advancement of the pacer lead retrograde across the aortic valve also provides entry to the left ventricle.^[2]

Risk factors for lead malpositioning include abnormal thoracic anatomy, underlying congenital heart disease, and operator inexperience.^[3] Since the left and right ventricles lie in the same plane, standard posteroanterior chest X-ray may not clearly demonstrate the malposition.^[1,2] Endocardial leads have been associated with increased risk of thromboembolism, and aortic or

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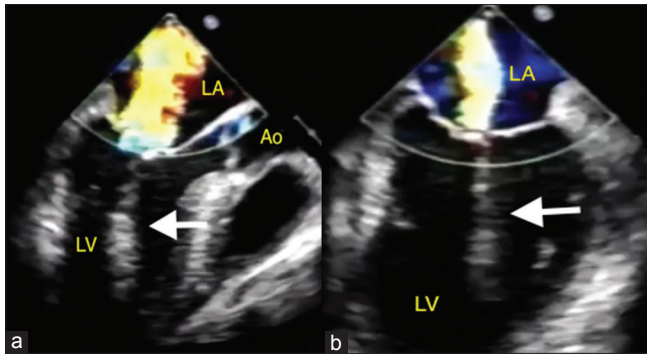


Figure 2: Transesophageal echocardiogram mid-esophageal long-axis (a) and two-chamber (b) views demonstrating the pacemaker wire (arrow) and mitral regurgitation. LA: Left atrium, LV: Left ventricle, Ao: Aorta

mitral valve damage.^[2] If the lead malposition is discovered early, the treatment of choice is lead removal and repositioning. With lead malposition *in situ*, the incidence of thromboembolism increases with time. Therefore, lifelong anticoagulation has been recommended. If there is valvular interference or if repositioning of the lead needs to occur, management should be individualized.^[1,2]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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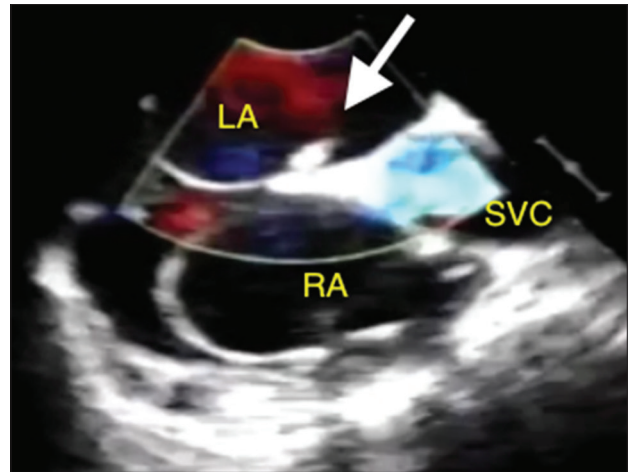


Figure 3: Transesophageal echocardiogram bi-caval view demonstrating the ventricular pacemaker lead (arrow) crossing into the left atrium through a patent foramen ovale. LA: Left atrium, RA: Right atrium, SVC: Superior vena cava

Conflicts of interest

There are no conflicts of interest.

References

1. Wynn GJ, Weston C, Cooper RJ, Somauroo JD. Inadvertent left ventricular pacing through a patent foramen ovale: Identification, management, and complications for postpacemaker implantation checks. *BMJ Case Rep* 2013;2013. doi: 10.1136/bcr-2012-008312.
2. Trohman RG, Sharma PS. Detecting and managing device leads inadvertently placed in the left ventricle. *Cleve Clin J Med* 2018;85:69-75.
3. Ohlow MA, Roos M, Lauer B, Von Korn H, Geller JC. Incidence, predictors, and outcome of inadvertent malposition of transvenous pacing or defibrillation lead in the left heart. *Europace* 2016;18:1049-54.