

Lead Dislodgement Post Invasive Hemodynamic Assessment after Atrioventricular Node Ablation and Biventricular Pacemaker

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ABSTRACT


A man with history of Heart Failure with preserved Ejection Fraction (HFpEF), Atrioventricular (AV) node ablation followed by biventricular pacemaker placement was hospitalized for dyspnea. During invasive hemodynamic assessment patient had brief episode of asystole due to lead displacement. Right catheterization should be cautiously performed in patients with intracardiac devices, when done safety protocols should be followed.

KEYWORDS: Pacemaker; Cardiac resynchronization therapy; cardiac catheterization.

INTRODUCTION

An 85-year-old man with HFpEF and permanent atrial fibrillation (AF) status post multiple electrical cardioversions and three unsuccessful AF ablations was hospitalized due to rapid ventricular response and dyspnea. Rate control failed with Intravenous AV blocking agents. A biventricular pacemaker followed by AV node ablation was performed. Within ten days after hospitalization, patient returned to emergency department twice for dyspnea. Workup did not reveal procedural complications. A decision was made to perform invasive hemodynamic assessment (IHA) under fluoroscopy. During the procedure patient had a brief episode of asystole. A temporary venous pacemaker was placed. Electrophysiology (EP) was consulted, electrograms were reviewed (Fig. 1) and the right ventricular lead was repositioned.

It's known that there is a high risk of lead displacement during the first weeks of permanent pacemaker implants¹. However, there are no clear EP society guidelines regarding the safe timing of elective invasive procedures involving the

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Received: Sep. 06, 2023 | Accepted: Oct. 24, 2023



right atrium. Cases of pacemaker dislodgment during invasive cardiovascular procedures have been reported^{2,3}. Presence of pacemaker leads is not per se a contraindication for IHA, but we propose that if done in the early months, it is best done under fluoroscopy, in the presence of a programmer, temporary transvenous leads, transcutaneous pads and with pacemaker programmed in DOO. Even though there is no consensus, elective IHA should be avoided in the first 6 months after lead placement, especially in pacer dependent patients. In an emergency, in addition to the above precautions, avoiding balloon inflation and instead advancing the catheter over a wire might help reduce the chances of dislodgement.

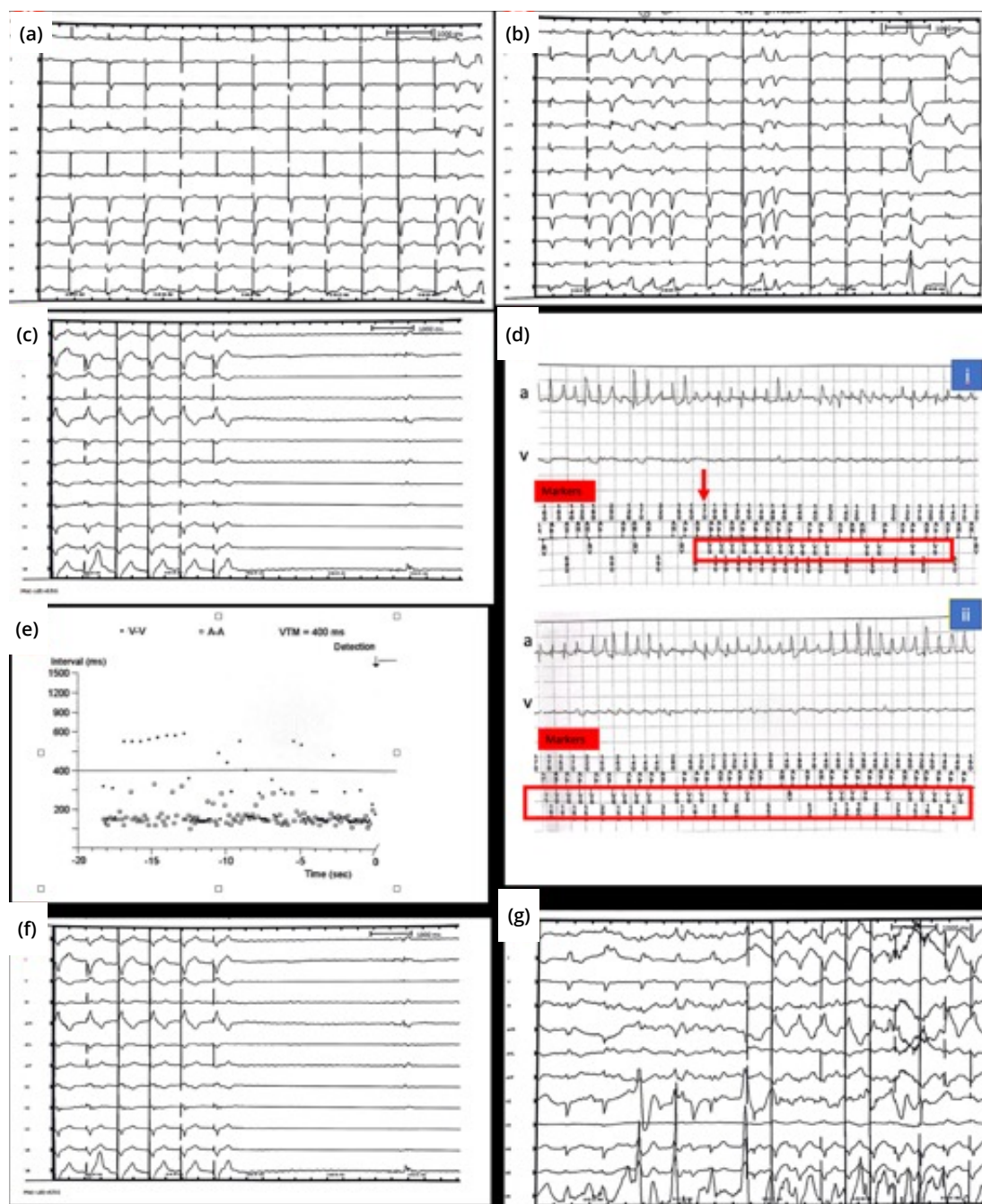


Figure 1. Tracings - A - Baseline tracing at the time of pulmonary artery catheter (PAC) insertion. PVCs are seen at the end of the tracing when PAC reached the RV. B - Episodes of non-sustained ventricular tachycardia during PAC manipulation in the RV. Last paced QRS is wider and has a different morphology possibly due to RV lead dislodgement and LV pacing only. C - LV pacing followed by asystole due to RV lead oversensing of the atrial activity possibly due to transitory migration to RA. D- EGM at the time of asystole. Ventricular pacing followed by oversensing of the atrial activity (red arrow). Inappropriate ventricular sensing (red box) was likely due to migration of the RV lead to the RA that inhibited RV and LV pacing causing asystole. E - A dot-plot of the asystole episode, showing VV-intervals at the same rate of the A-A intervals which increase the likelihood of ventricular oversensing caused by RV lead migration. F - Escape rhythm after asystole. G - Heart rate accelerated after epinephrine was given. Return to LV pacing only.

Source: Elaborated by the authors.

CONFLICT OF INTEREST

None.

FUNDING

Not applicable.

DATA AVAILABILITY STATEMENT

The data will be available upon request.

AUTHORS' CONTRIBUTION

The data will be available upon request.

ACKNOWLEDGMENTS

Not applicable.

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