VIA MEDICA
IMAGES IN CARDIOLOGY
Cardiology Journal
2011, Vol. 18, No. 2, pp. 200–201

ISSN 1897–5593

Misguided pacemaker lead

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An 81 year-old male with a history of atrial fibrillation, hypertension, and coronary artery bypass graft (CABG) underwent a routine pre-operative evaluation for forthcoming total knee arthroplasty. His cardiac history included the insertion of a permanent single chamber pacemaker (Medtronic KSR 703 with a Medtronic 5092 bipolar lead) in 2000 for symptomatic atrial fibrillation with slow ventricular response.

As part of the pre-operative evaluation, the patient had an electrocardiogram (ECG) which revealed ventricular paced rhythm with right bundle branch block (RBBB) morphology (Fig. 1). Computed tomography of the chest demonstrated a single ventricular lead, posteriorly directed towards the left ventricle (LV) (Fig. 2A). The tip of the lead traveled from the right atrium through the coronary sinus and resided within the infero-posterior coronary vein over the LV (Fig. 2B). Transthoracic echocardiography revealed no evidence of a pericardial effusion, atrial septal defect, nor ventricular septal defect. Upon review of past ECGs, it was confirmed that the RBBB morphology pattern had been present since the time of insertion. The patient con-

Figure 1. Electrocardiogram which revealed ventricular paced rhythm with right bundle branch block morphology.

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Received: 25.05.2010 Accepted: 9.07.2010

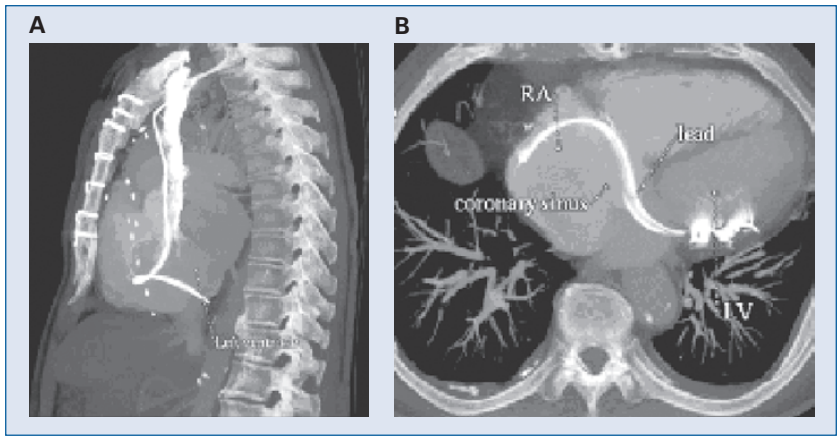

Figure 2. A. Computed tomography of the chest demonstrated a single ventricular lead, posteriorly directed towards the left ventricle; **B.** The tip of the lead traveled from the right atrium (RA) through the coronary sinus and resided within the infero-posterior coronary vein over the left ventricle (LV).

tinues to have no adverse effects of LV pacing and is routinely followed up on an outpatient basis.

Permanent ventricular pacing is traditionally achieved by placing a lead into the apex of the right ventricle for symptomatic bradycardia and/or advanced conduction abnormalities [1]. During implantation, there is potential for the ventricular lead to be inadvertently inserted into LV, either through a patent forman ovale, ventricular septal defect, or coronary sinus (CS), leading to RBBB pacing. Although CS pacing occurs intentionally during cardiac resynchronization therapy [1], insertion into the CS during single lead pacing is rare, but should be entertained in the differential diagnosis with RBBB on ECG post-implantation.

Acknowledgements

The authors do not report any conflict of interest regarding this work.

References

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