CJC Open 1 (2019) 268–269

Images in Cardiology

Lancisi's Sign After Implantation of a Pacemaker

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A 57-year-old woman with a history of sick sinus syndrome who underwent implantation of a dual-chamber pacemaker with a lead positioned in the right ventricular apex and a lead positioned in the right atrial appendage 18 months prior presented with significant lower-limb edema, ascites, and a weight gain of 15 kg over a 6-week period. On cardiovascular examination, the patient was noted to be in sinus rhythm with frequent short episodes of atrial fibrillation and a grade 2/6 pansystolic murmur along the left sternal border that was louder with inspiration. A large palpable venous systolic pulsation was clearly evident on jugular venous examination. This venous systolic pulsation represents giant C-V waves, known as "Lancisi's sign," with a variability in the timing between sinus rhythm and atrial fibrillation (Fig. 1 and Video 1; view video online). Transesophageal echocardiography revealed a lack of coaptation between the posterior and septal leaflets of the tricuspid valve (Fig. 1) with an eccentric jet of tricuspid regurgitation as a result of the right ventricular pacemaker lead impinging on the posterior leaflet.

Lancisi's sign is found in cases of severe tricuspid regurgitation in which the pulsation from right ventricular contraction is fused with the c wave, which normally occurs during closure of the tricuspid valve with loss of the x descent and followed by an augmented y descent. Tricuspid regurgitation after implantation of a pacemaker or defibrillator lead into the right ventricle may occur as a result of perforation of one of the valve leaflets, mechanical inhibition of valve coaptation, entrapment of a leaflet, or damage to papillary muscles or chordae tendinae.[1] In this case, the diagnosis was lack of leaflet coaptation. After implantation of a lead across the tricuspid valve, this is an increasingly common finding, and significant tricuspid regurgitation may occur in 10% to 39% of patients.[2,3]

The patient was treated with intravenous diuretics followed by extraction of the right ventricular lead. A new lead was positioned in a posterolateral branch of coronary sinus with left ventricular capture and a significant improvement in the degree of tricuspid regurgitation. The patient has remained clinically well since undergoing this procedure with a normal jugular venous pulse.

This case demonstrates an important clinical finding as a result of tricuspid regurgitation secondary to a pacemaker lead insertion. This is an increasingly recognized complication of implantable devices that may require further evaluation.

Disclosures

The authors have no conflicts of interest to disclose.

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Supplementary Material

To access the supplementary material accompanying this article, visit *CJC Open* at https://www.cjcopen.ca and at https://doi.org/10.1016/j.cjco.2019.06.005.

Received for publication June 4, 2019. Accepted June 6, 2019.

Ethics Statement: This work adheres with current ethical guidelines.

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See page 268 for disclosure information.

https://doi.org/10.1016/j.cjco.2019.06.005

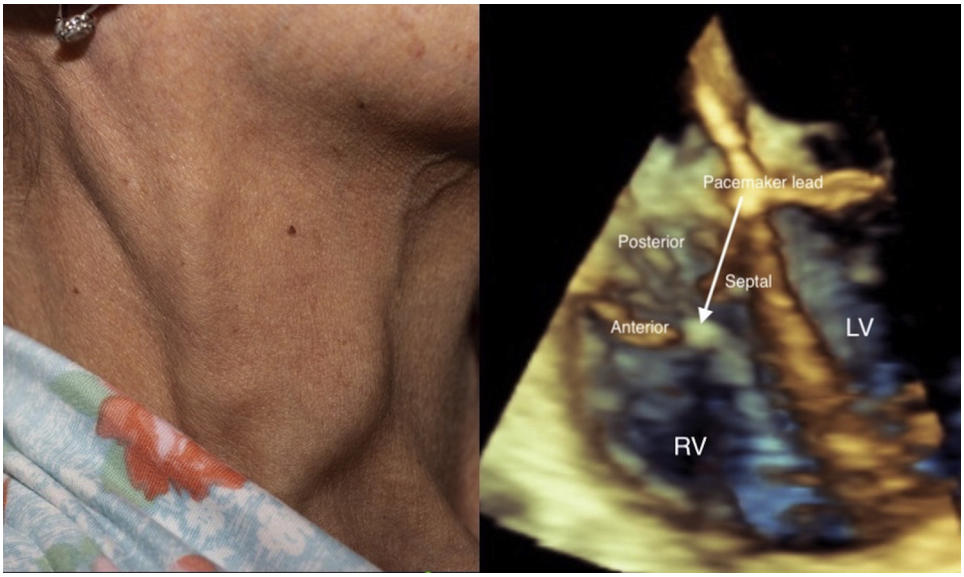

Figure 1. Large venous distension of the right internal jugular vein **(left)** as a result of severe tricuspid regurgitation caused by a right ventricular pacemaker lead restricting coaptation of the septal and posterior leaflets of the tricuspid valve as shown on 3-dimensional transesophageal echocardiography **(right)**. LV, left ventricle; RV, right ventricle.