Inadvertent Placement of Pacemaker Lead into the Systemic Ventricle in Repaired D-Transposition of the Great Arteries

Suman S. Kuppahally, MD; Larry S. Green, MD; Andrew D. Michaels, MD, MAS; Stephen M. Ishihara, RDCS; Roger A. Freedman, MD; Sheldon E. Litwin, MD

We report a case of a 27-year-old man with Senning repair of D-transposition of the great arteries. A dual-chamber pacemaker was placed for syncope due to sinoatrial node dysfunction 3 years before this presentation. He had no further syncope but complained of dyspnea on exertion and mild exercise intolerance. A routine chest x-ray and transthoracic echocardiography suggested the presence of a pacing lead in the systemic ventricle (anatomic right ventricle). To better define the anatomy and lead position, he underwent a gated computed tomography scan. This showed an appropriately positioned atrial lead in the nonsystemic atrium (anatomic left atrium), but the ventricular lead had perforated through the atrial baffle, coursing into the systemic ventricle (Figure, A and B; online-only Data Supplement Movies I and II). A small systemic-to-venous baffle shunt was seen in the region of the perforation. The systemic ventricle had mildly reduced systolic function.

Inadvertent placement of pacing leads in the systemic ventricle and the presence of intracardiac shunts pose significantly high risk of systemic thromboembolism. During the 3 years since pacemaker implantation, our patient remained asymptomatic from thromboembolic complications. The lead was extracted from the systemic ventricle and reimplemented correctly in the nonsystemic ventricle (anatomic left ventricle) under fluoroscopic and transesophageal echocardiographic guidance (online-only Data Supplement Movies III and IV). Transthoracic echocardiography with bubble contrast after removal of lead from the systemic right ventricle showed a persistent baffle leak (online-only Data Supplement Movie V).

This case highlights the importance of understanding the complex anatomy of the atrial baffles in patients with repaired transposition of the great arteries before device implantation to avoid potential complications from transvenous pacemaker implantation. It is also necessary to know the course of the venous baffle and rule out baffle leaks and obstruction. Newer imaging techniques such as cardiac computer tomography and magnetic resonance imaging are helpful in guiding management in complex congenital heart diseases. Compared with magnetic resonance imaging, computed tomography imaging is faster and can be used in patients with pacemakers and defibrillators.

Disclosures

None.

Reference

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