Images in Cardiovascular Medicine

Pacemaker Endocarditis Viewed via Intracardiac Ultrasonography

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A 61-year-old man with chronic dual-chamber pacemaker implantation was admitted with a 3-day history of fever, chills, dyspnea, and productive cough. Multiple blood cultures grew methicillin-sensitive *Staphylococcus aureus*. A transesophageal echocardiogram showed evidence of endocarditis, with a small vegetation (approximately 1.0 cm) on the ventricular pacemaker lead (Fig. 1). Intracardiac ultrasonography was performed before percutaneous extraction of the right atrial and right ventricular pacemaker leads, with the patient under general anesthesia. A large (1.5 × 3-cm) pedunculated vegetation could be seen adhering to the ventricular lead, prolapsing through the tricuspid annulus (Fig. 2). After consulting with cardiothoracic surgeons, we proceeded with transvenous extraction, using an excimer laser and telescoping sheaths. Apparently, the vegetation was shredded or dislodged during the procedure, because follow-up images showed no vegetations. The patient tolerated the procedure well, remaining hemodynamically stable throughout. Within 48 hours, he developed transient fever, pleuritic chest pain, and a right hilar infiltrate; however, these were resolved with antibiotic therapy.

Comment

Lead infection generally occurs due to hematogenous seeding of the organism in the absence of pocket infection. Risk factors such as diabetes mellitus and immunosuppression are usually present. Prompt explantation of infected leads is essential to

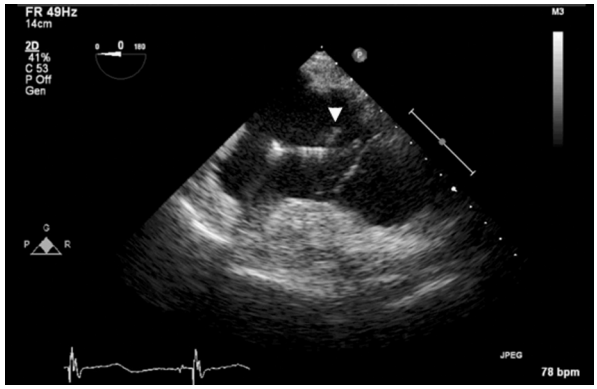

Fig. 1 *Transesophageal echocardiogram of the pacemaker lead. An apparently small vegetation (arrowhead) was visible on the ventricular portion of the lead.*

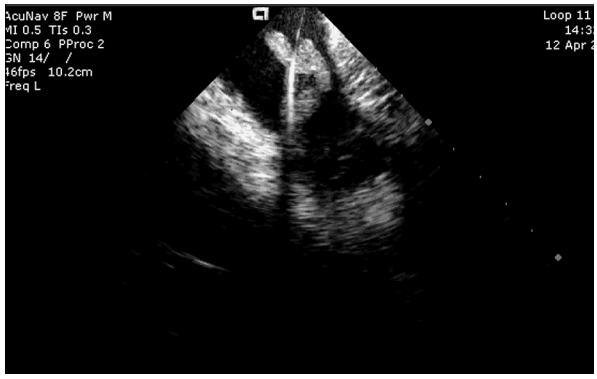

Fig. 2 *Intracardiac ultrasonography of the pacemaker lead. A large, mobile vegetation is attached to the ventricular lead near the tricuspid annulus.*

Real-time motion image is available at texasheart.org/journal.

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resolution of the infection. Without device removal, the outcomes are uniformly poor and include pulmonary embolism, overwhelming sepsis, and a poor response to medical therapy. The size of the vegetation may influence the decision about whether to perform lead extraction percutaneously or surgically; surgical removal of large vegetations may decrease the risk of a life-threatening pulmonary embolism. In this patient, visualization of the vegetation was greatly facilitated by high-resolution intracardiac imaging, likely due to the proximity of the probe to the vegetation and to the superior resolution of the image. After the procedure, the patient developed symptoms that were consistent with embolism of the fragmented vegetation; however, these symptoms were without hemodynamic consequences.

References

1. Miralles A, Moncada V, Chevez H, Rodriguez R, Granados J, Castells E. Pacemaker endocarditis: approach for lead extraction in endocarditis with large vegetations. Ann Thorac Surg 2001;72(6):2130-2.