Leadless cardiac pacemaker as alternative in case of congenital vascular abnormality and pocket infection

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Pacemaker implantation in the presence of congenital venous abnormalities can be challenging even more if associated with an infection of a previously implanted cardiac device. We report the case of a 60-year-old man with locally infected skin erosion of a single-chamber pacemaker pocket after recent battery replacement.

A 60-year-old man presented to the outpatient pacemaker clinic with locally infected skin erosion of a single-chamber pacemaker pocket (Panel A) after recent battery replacement. Laboratory tests showed no sign of systemic infection (no leukocytosis, CRP: 3.1 mg/l—normal value <5.0 mg/l). In 1994, the patient underwent pacemaker implantation followed by His-bundle ablation for rate control of permanent atrial fibrillation (AF). Adequate right ventricular lead implantation was challenging due to the absence of a right superior vena cava (Panels B and C). The right brachiocephalic vein drained directly into a left persistent superior vena cava that drained directly into the coronary sinus.

A standard left-sided single-lead pacemaker was not preferred by the patient because of weightlifting practice. Therefore, we decided to re-implant a leadless pacemaker [Micra™ transcatheter pacing system (TPS), Model MC1VR01, Medtronic, Inc., Minneapolis, MN, USA] to avoid both potential difficulties of lead positioning and new complications at the site of the device implantation associated with fitness activities.1

Under general anaesthesia, after placement of a temporary pacemaker via the left femoral vein, the infected material was first removed via a subclavian approach using an Evolution RL active sheath (Cook Medical, Bloomington, IN, USA) (Panel D). A minor lead rest remained.

Thereafter, a TPS was implanted via the right femoral vein. After sequential dilatation, the large 27 French introducer was advanced over a stiff guidewire to the right atrium. The delivery catheter was then advanced and manipulated to implant the pacing capsule at the apex of the right ventricle (Panel E). The first position was mechanically stable (confirmed by the ‘pull and hold’ testing) associated with excellent electrical measurements: sensing >20 mV, pacing impedance 780 Ω, and pacing thresholds 0.5V@0.5 ms.
The TPS was released from its tether (Panel F), the delivery tools were removed, and the skin was closed using a figure 8 stitch. The implantation procedure was uncomplicated and uneventful. Total implantation time lasted 25 min. Electrical measurements of the device were stable at 3-month follow-up.

In conclusion, leadless cardiac pacing was here a practical alternative for a conventional pacemaker system after device-related infection and in the presence of compromised venous access due to a congenital venous abnormality.

Reference