Twiddling in cardiac resynchronization therapy: ‘when length matters’

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We report on a 75-year-old woman who successfully underwent cardiac resynchronization therapy. Two weeks after implantation, right continuous pectoral stimulation appeared. Retraction and dislodgement of the right atrial and right ventricular leads as well as coiling of the three leads around the device generator were observed on chest radiography, but, surprisingly, the left ventricular lead remained unaffected due to its major length to facilitate the manoeuvres of implantation.

Introduction

Cardiac device twiddling has been broadly reported in patients with permanent pacemakers and implantable cardioverter defibrillators, but its description in cardiac resynchronization patients is more rare as these devices are larger and usually more difficult to move.1–3

Case report

A 75-year-old woman was admitted to undergo cardiac resynchronization therapy (CRT). Three leads were placed in the right atrium, apex of the right ventricle, and coronary sinus (Figure 1A). A CRT device (Contak Renewal TR2, Boston Scientific) was implanted using a bipolar lead (Easytrak 2, 90 cm) placed transvenously via the coronary sinus to a lateral cardiac vein for left ventricular pacing and active fixation leads for right atrial and right ventricular pacing (Flextend II, 52 and 58 cm, respectively). The three leads as well as the pulse-generator were secured to the fascia, the leads by use of a tie around the suture sleeve and lead.

Fifteen days after implantation, the patient presented with sporadic muscle twitching of the right anterior chest. Stimulation of the right pectoral major muscle was due to pacing from the retracted right atrial lead located at the brachiocephalic vein (Figure 1B, arrow 1). Chest radiography revealed retraction and macrodislodgement of both the screw-in right atrial and right ventricular leads (Figure 1B) as well as coiling of the three leads around the pulse-generator. Surprisingly, the left ventricular lead was not affected at all (Figure 1B, arrow 3). During surgical revision, the dislodged right ventricular lead floating in the right atrium was easily uncoiled, repositioned, and carefully fixed to the fascia. The dislodged atrial lead was replaced with another active fixation lead due to fixation stylet malfunction. The device was sutured to the fascia and tight ligature over the protective sleeve to anchoring the leads with the body tissue was performed. During a follow-up period of 12 months, there was no evidence of new complications.

Figure 1 Chest radiography confirming satisfactory position of pacing leads after implantation (A). Radiographic examination at the point of right chest wall stimulation revealed the presence of retraction and macrodislodgement of the right atrial and right ventricular leads unlike the coronary sinus lead which remained unaffected (B).

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Discussion
Twiddler’s syndrome is characterized by rotation of the pulse-generator on its long axis with subsequent coiling of the pacemaker lead and usually occurs in obese women with loose, fatty subcutaneous tissue. When rotation occurs on its transverse axis, coiling of the leads occurs around the device generator and the phenomenon is termed Reel syndrome, as in the present case.

Our patient denied any conscious undue movement of the generator, and spontaneous twiddling could be responsible for this dislodgement, migration, and coiling of the right atrial and right ventricular leads despite the difficulty in movement of the large dimension of the generator in the pocket. In the present case, it seems plausible that the excess of length of the left ventricular lead to facilitate the implantation of the electrode was the reason why that lead was not dislodged, regardless of severe coiling of the three leads around the pulse-generator. The use of subfascial device pockets, fixation of the generator with a ligature, and avoidance of oversized pockets may reduce the incidence of this complication.

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References