Country cardiograms case 40: Answer

On examining the electrocardiogram in Figure 1 (on page 102), we can identify on the lead II rhythm strip (bottom of the tracing) an underlying sinus rhythm as the patient’s “native rhythm.” Normally, in a paced rhythm one sees pacemaker spikes after appropriate asystolic pauses from the previous beat of the native rhythm. These pacemaker spikes are followed by paced beats, which are seen (because the pacemaker wire resides in the right ventricle) as wide, distorted QRS complexes with a modified left bundle branch block pattern.

In the electrocardiogram of this patient, we can see no such pauses, and yet there are pacemaker spikes falling exactly after each T wave with no succeeding QRS-complex “capture beats.” The patient was feeling “twitches” that coincided with those spikes seen on the bedside heart monitor, indicating there was stimulation of the muscles of the chest wall. Displacement of the pacemaker wire was suspected. A chest radiograph was obtained, which confirmed the wire was in the superior vena cava (Fig. 2).

The patient was referred back to the tertiary care hospital for repositioning of the pacemaker lead. A follow-up chest radiograph after repositioning showed proper placement (Fig. 3).

DISCUSSION

Bayliss and colleagues\(^1\) first used the term “pacemaker-twiddler’s syndrome” to describe a patient who had dislocation of the pacemaker wire with retraction into the neck, causing “failure to pace” and brachial plexus stimulation. The authors explained,

lead traction is the result of a capstan effect produced by a rotating pulse generator within a pocket which has become too capacious. Rotation can occur either spontaneously or as the result of repeated twiddling on the part of the patient.\(^1\)

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**Fig. 2.** Chest radiograph showing the tip of the pacemaker out of position in the proximal superior vena cava. The pacing generator had rotated about 180 degrees counterclockwise, and the lead was pulled around it.

**Fig. 3.** Follow-up chest radiograph showing proper placement of the pacemaker’s tip in the right ventricle, with the pacing generator rotated 180 degrees clockwise.
Subsequent case reports described the syndrome as a complication of pacemakers and defibrillators, when the patient consciously or unconsciously causes the pacing generator to rotate in its pocket, resulting in dislodgment of the tip. It has been suggested that the generator be sutured in place to fascia and that the pocket size be made as small as possible.

Our patient’s pacemaker wire had been initially inserted and attached with Prolene sutures over a Silastic sleeve. The generator had been placed in an antpectoral pocket, which was closed with 2 layers of absorbable sutures. He reported that 3 days after insertion of the pacemaker, he had started to experience intermittent “mild muscle spasms” or “electrical snaps” centrally in his lower chest. The symptom had occurred 10–12 times in a row before stopping. These “spasms” had become more intense and frequent the day he presented to our emergency department. The patient was thin and well-built, so likely the pocket was a little loose. This may have caused the generator to rotate with movement of the left shoulder, causing the wire to slowly slide back because of the “capstan effect” noted by Bayliss and colleagues. During the repositioning procedure, it was found that the ties around the wire were loosened, and the wire was freely sliding within the sleeve.

For the question, see page 102.

REFERENCES


Country Cardiograms

Have you encountered a challenging ECG lately?

In most issues of CJRM an ECG is presented and questions are asked.

On another page, the case is discussed and the answer is provided.

Please submit cases, including a copy of the ECG, to Suzanne Kingsmill, Managing Editor, CJRM, 45 Overlea Blvd., P.O. Box 22015, Toronto ON M4H 1N9; cjrm@cjrm.net

Cardiogrammes ruraux

Avez-vous eu à décrypter un ECG particulièrement difficile récemment?

Dans la plupart des numéros du JCJR, nous présentons un ECG assorti de questions.

Les réponses et une discussion du cas sont affichées sur une autre page.

Veuillez présenter les cas, accompagnés d’une copy de l’ECG, à Suzanne Kingsmill, rédactrice administrative, JCJR, 45, boul. Overlea, C. P. 22015, Toronto (Ontario) M4H 1N9 ; cjrm@cjrm.net