Right phrenic stimulation due to defibrillator implantation: A rare cause

Stimulation diaphragmatique droite suite à l’implantation d’un défibrillateur : une étiologie rare

François Roubille, François Massin, Jean-Marc Davy

Département de cardiologie et maladies vasculaires, hôpital Arnaud de Villeneuve, CHRU de Montpellier, 371, avenue du Doyen-Gaston-Giraud, 34295 Montpellier, France
U1046, Inserm, CHU Arnaud de Villeneuve, université Montpellier 1 et 2, 371, avenue du Doyen-Gaston-Giraud, bâtiment Inserm Crastes-de-Paulet, 34295 Montpellier, France
CNRS, UMR-5203, Inserm, U661, institut de génomique fonctionnelle, universités de Montpellier 1 et 2, 141, rue de La-Cardonille, 34396 Montpellier cedex, France

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We report the case of a 68-year-old man admitted for acute heart failure with troponin I elevation. His medical history was mainly pulmonary adenocarcinoma treated with surgery (left superior lobectomy) a few months previously. He was also known to have had a coronary stenosis on the little branch of the left descending coronary artery on a coronary angiogram 3 years earlier.

After medical treatment, a new coronary examination revealed no additional lesions on the coronary tree. During hospitalization, ventricular tachycardia was observed. His left ventricular ejection fraction had been already evaluated at 30% despite adapted treatment. An automatic implanted cardiac defibrillator (ICD) was then required. Implantation of a single-chamber ICD was performed without any problem, with a single-coil defibrillator lead screwed at the apex of the right ventricle (Fig. 1, Panel A). Four days after implantation, the patient presented with diaphragmatic stimulation. Lead displacement was suspected, as the patient had not complied with the recommended rest. Surprisingly, there were right and not left diaphragmatic contractions. The lead had moved towards the superior vena cava (Fig. 1, Panels B and C). As shown in the schematic drawing (Fig. 1, Panel D),

* Corresponding author.
E-mail address: f-roubille@chu-montpellier.fr (F. Roubille).

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the lead could have moved close to the right phrenic nerve, explaining this rare complication. Unfortunately, this tight nerve structure could not be seen on a computed tomography scan.

Lead displacement after pacemaker or ICD implantation is not infrequent. Left diaphragmatic contraction is usually due to a lead being over its target. However, right diaphragmatic contractions are rarely reported.

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