Use of a biventricular implantable cardioverter defibrillator in a patient with a neurostimulator: is it a safe combination?

H. G. R. Dorman · A. Onrust · R. Brants ·
Y. J. Stevenhagen · M. F. Scholten

Published online: 13 April 2011
© Springer Media / Bohn Stafleu van Loghum 2011

The coincident use of neurostimulators and devices such as ICDs and pacemakers is increasing. This is because of the expanding indications for both devices. The manufacturers of ICDs caution against the combined use of ICDs and neurostimulators because of possible device interaction [1]. A 55-year-old woman was referred because of drug-refractory heart failure. In 2009, a neurostimulator (Synergy Versitrel, Medtronic, Inc, Minneapolis, Minnesota, USA) was implanted because of intractable back pain. She was admitted because of heart failure in the presence of dilating cardiomyopathy. Implantation of a biventricular implantable

cardioverter defibrillator was indicated. A CRT-D (Consulta D234TRK, Medtronic, Inc, Minneapolis, Minnesota, USA) was implanted in the left pectoral region. Peri-procedural testing, with the ICD set to maximum sensitivity and the neurostimulator set to maximum therapeutic output, showed no interaction between the two devices (Fig. 1). A chest X-ray after the implantation showed adequate positioning of the leads (Fig. 2). The combination of cardiac resynchronisation therapy defibrillator and neurostimulators can be safe. However, extensive peri-operative testing is essential in preventing device interaction [1–3].

H. G. R. Dorman (✉) · A. Onrust · Y. J. Stevenhagen ·
M. F. Scholten
Department of Cardiology, Thoraxcentrum Twente,
Medisch Spectrum Twente,
PO Box 50000, 7500 KA, Enschede, the Netherlands
e-mail: h.dorman@mst.nl

R. Brants
Medtronic CRDM,
Heerlen, the Netherlands

Fig. 1 Post-procedural electrocardiographic registration. Showing leads I and II (surface ECG), Farfield-ECG (from coil to can) and EGM2 (right ventricle). Note that there is no neurostimulator signal

present, even though the neurostimulator output is set to maximum and ICD sensitivity is set to 0.30 mV

Fig. 2 Anterior and lateral X-ray images, demonstrating the biventricular ICD system and the neurostimulator electrode (black arrows)

References

1. Monahan K, Casavant D, Rasmussen C, et al. Combined use of a true-bipolar sensing implantable cardioverter defibrillator in a patient having a prior implantable spinal cord stimulator for intractable pain. *Pacing Clin Electrophysiol.* 1998;21:2669–72.
2. Katwal A, McCotter C. Use of a wireless implantable cardioverter defibrillator in a patient with a preexisting neurostimulator. *Pacing Clin Electrophysiol.* 2009;32:822–4.
3. Ferrero P, Grimaldi R, Massa R, et al. Spinal cord stimulation for refractory angina in a patient implanted with a cardioverter defibrillator. *Pacing Clin Electrophysiol.* 2007;30:143–6.