Circumventing a left ventricular assist device and implantable cardioverter defibrillator interaction: an alternative method of shielding

Kimberly D. Guise1, Fabio Francone2, and Eugene H. Chung1*

1Division of Cardiology, Cardiac Electrophysiology, University of North Carolina, Chapel Hill School of Medicine, 160 Dental Circle, CB 7075, Chapel Hill, 27599 North Carolina, USA and 2St. Jude Medical, Inc., St. Paul, Minnesota, USA
* Corresponding author. Tel: +1 919 966 4743; fax: +1 919 966 4366; E-mail: ehchung@med.unc.edu

Our patient is a 50-year-old African-American man with non-ischaemic cardiomyopathy. A St Jude Medical (SJM) Atlas V-193 was placed at implantable cardioverter defibrillator (ICD) change out in 2006, and in 2010, a Thoratec HeartMate II left ventricular assist device (LVAD) for end-stage heart failure. In the post-operative (post-LVAD) period he developed incessant, slow ventricular tachycardia.

Initially, communication between the SJM programmer and ICD could not be established. The operational frequency emitted by the HeartMate II (7.2 kHz) is very similar to that employed during the ‘handshake’ between the V-193 and the programmer (8 kHz). Various shielding methods have been proposed. We modified a reported method by adding a surgical tray over the LVAD (see the figure). Early generator exchange is an option but poses significant risks. Older SJM ICD families (Photon, Epic, and Atlas) operate at 8 kHz. Current SJM ICDs still use 8 kHz for high voltage impedance measurements. Similar problems have been reported with Sorin Ovatio DR and Alto 2 ICDS.

In patients with the HeartMate II and certain ICDs, we recommend using a large surgical steel tray to cover the LVAD and covering the programmer cord with a steel conduit and the programmer head with an aluminum electrical outlet box.

The full-length version of this report can be viewed at: http://www.escardio.org/communities/EHRA/publications/ep-case-reports/Documents/cardioverter-defibrillator.pdf

Published on behalf of the European Society of Cardiology. All rights reserved. © The Author 2013. For permissions please email: journals.permissions@oup.com.

References