Electromagnetic Interference and ICD Discharge Related to Chiropractic Treatment

STEPHEN C. VLAY

From the Stony Brook Arrhythmia Study and Sudden Death Prevention Center, Division of Cardiology, Department of Medicine, The State University of New York at Stony Brook, Stony Brook, New York

VLAY, S.C., ET AL.: Electromagnetic Interference and ICD Discharge Related to Chiropractic Treatment. *Electromagnetic interference is well known to cause false sensing in ICDs. Sources may include instrumentation involved with acupuncture, arc welding, electrocautery, diathermy, electrolysis, and transcutaneous electric nerve stimulator units as well as power lines. Patients with ICDs are cautioned to avoid exposure to these sources. (PACE 1998; 21:2009)*

internal cardioverter defibrillator, electromagnetic interference, transcutaneous electrical nerve stimulator, defibrillation, chiropractic treatment

Case Report

A 41-year-old male with nonischemic cardiomyopathy and both clinical and inducible sustained monomorphic ventricular tachycardia was treated with a Medtronic Microjewel 7221Cx ICD (Medtronic Inc., Minneapolis, MN, USA). Despite appropriate warning, he underwent chiropractic treatment with a low output transcutaneous electric nerve stimulator (TENS) type of muscle stimulator and experienced an ICD discharge. The electrode pads were in the sacral region and further than 12 inches away from the ICD pulse generator. He had no arrhythmia symptoms. Interrogation of the ICD telemetry for the event revealed evidence of electromagnetic interference (EMI) (Fig. 1). Pulsatile EMI (sinusoidal waveform) is noticeable on the electrogram. As soon as the patient experienced the shock, he removed the electrodes. The intensity of the interference changes. This case illustrates EMI due to chiropractic equipment resulting in false detection by an ICD. Patients must be instructed to avoid this source of EMI and physician warnings must be heeded.

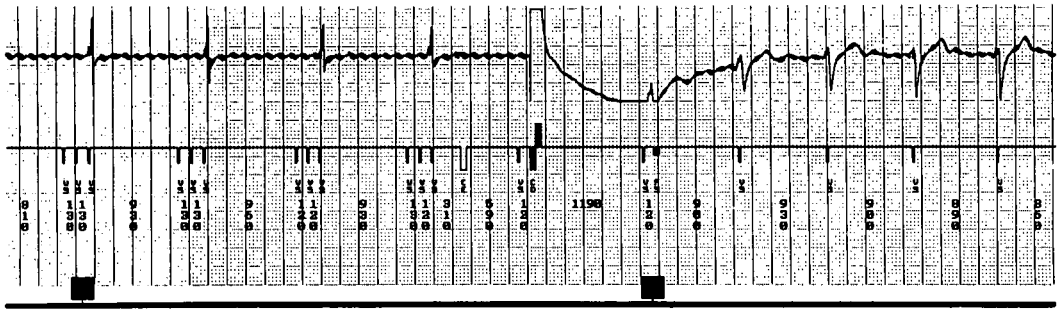

Figure 1. *Telemetry strip from the Medtronic Microjewel implantable cardioverter defibrillator demonstrating electromagnetic interference resulting in detection and shock therapy.*

Address for reprints: Stephen C. Vlay, M.D., SUNY Health Sciences Center T-17 020, Stony Brook, NY 11794-8171. Fax: (516) 444-1054.

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