Induction ovens and electromagnetic interference: what is the risk for patients with implantable cardioverter defibrillators?

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Electromagnetic fields may interfere with normal implantable cardioverter defibrillator (ICD) function. Although the devices are effectively shielded and use exclusively bipolar leads, electromagnetic interference (EMI) remains a concern when patients are exposed to several household appliances. The aim of this study was to evaluate potential EMI risk of induction ovens, which are increasingly common in private households. In vitro measurements of an induction oven for private households GK 43 TI (V-Zug, Inc., Zug, Switzerland) showed that heating is regulated by increasing operating time from level 1 (100 ms/sec) to 5 (continuous operation). From levels 5 to 9 the magnetic field increases. Nineteen patients with left-sided implants of single- and dual-chamber ICD systems (8 Medtronic, 7 Guidant, and 4 St. Jude Medical) (18 males, 1 female), age (mean +/- SEM) 58 +/- 3 years, were included in this study. All patients were examined in standing position, bent over the cooking pot (minimal distance to the induction coil 25 cm), and with the cooking pot put eccentrically over the induction field at three different cooking levels (level 2, 5, and 9). The tests were repeated touching the cooking pot with one hand. Ventricular sensitivity was left unchanged. Ventricular tachycardia therapies were turned off in Medtronic and Guidant devices and ventricular sensing was continuously monitored in St. Jude Medical devices during testing. Interrogation of the devices after exposure did not show any inappropriate tachycardia detection, oversensing, or reprogramming. In conclusion, ICD patients can be reassured that EMI is unlikely to affect their devices if induction ovens are used in their kitchens.

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