Radiologically identified fracture of an implantable cardioverter defibrillator lead: fact or fiction?

Stylianos Tzeis,1*, Ernst J. Rummeny2, and Christof Kolb1

1Deutsches Herzzentrum und 1. Medizinische Klinik rechts der Isar, Faculty of Medicine, Technische Universität München, Lazarettstr. 36, 80636 Munich, Germany and
2Institut für Röntgendiagnostik, Klinikum rechts der Isar, Faculty of Medicine, Technische Universität München, Munich, Germany

* Corresponding author. Tel: +49 89 12182020; fax: +49 89 12184593. E-mail address: stzeis@otenet.gr or stzeis@hotmail.com

We report the case of a 69-year-old patient who was referred because routine chest X-ray had raised the suspicion of a disconnected and fractured lead of his implantable cardioverter defibrillator (ICD). Repeated testing of the ICD system showed a normal function.

The patient was initially supplied with an ICD system, in which the closure of the bipolar sensing/pacing circuit is performed within the pulse generator. As this is no longer available, on replacement of the pulse generator, a new bipolar sensing/pacing lead was connected to the device and the sensing/pacing part of the defibrillation lead was abandoned unconnected. The suspected lead fracture is attributed to the geometry of the ICD lead (497-19 Intermedics™ lead). At the point where the sensing/pacing part of the electrode is integrated into the lead body, the defibrillation part of the lead is deviated ~3 mm, thus resulting in the presented radiological caveat highly mimicking a lead fracture (Figure 1). Following documentation of proper device function, no lead revision or invasive procedures were performed.

It is thus evident that the geometry of the ICD leads may rarely mimic lead fractures. Similar structural lead peculiarities should be kept in mind by physicians in order to avoid unnecessary operative exploration of such ICD systems, and detailed and careful testing of proper ICD function should be performed in order to rule out device malfunction.

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