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Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):

Zaremba, T. (2013). *Radiotherapy in Patients with Pacemakers and ICDs: An Emerging Concern?*. Abstract from BIT's Annual International Congress of Cardiology 2013, Rom, Italy.

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Title: Radiotherapy in Patients with Pacemakers and ICDs: An Emerging Concern?

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Abstract

With an ageing population there is a growing probability that patients with a pacemaker (PM) or implantable cardioverter-defibrillator (ICD) will develop malignancies. Ionizing radiation used in cancer radiotherapy can harm these advanced electronic devices. Official guidelines for managing PM patients undergoing radiotherapy were published by the American Association of Physicists in Medicine back in 1994. This document gives no recommendations for radiotherapy in ICD patients. So far, no official recommendations on this matter have been issued by international cardiology societies. Furthermore, the recommendations by PM/ICD manufacturers vary regarding tolerable dose of ionizing radiation and follow-up. Cumulative doses accepted as safe for PM or ICD are generally lower than used in cancer treatment. Removal of PM/ICD in case of e.g. breast or lung cancer exposes patients to risk of complications and may increase hospital costs. There is some evidence that, besides cumulative dose, the damaging radiation effects increase with beam energy. In clinical practice, differences in treatment of these patients still exist. In the absence of updated international guidelines, close cooperation between oncologists and cardiologists in managing PM/ICD carriers undergoing radiotherapy is recommended. In low-energy radiotherapy, the relocation of a PM/ICD may be avoided in selected patients.

Biography

Tomas Zaremba works as a cardiologist at Aalborg University Hospital, Denmark. He is originally from Lithuania where he graduated from Vilnius University in 2003. He has since gained clinical experience at numerous cardiology and medical departments in Denmark. As a Ph.D. student at Aalborg University, Tomas Zaremba is conducting research on safe radiotherapy in patients with pacemakers and implantable cardioverter-defibrillators. Besides epidemiological aspects of this subject, he has published articles on experimental research on high-dose radiation and malfunctions in implantable cardiac rhythm devices. These studies covered both in vitro and in vivo settings. During the last two years, his other areas of expertise have been cardiovascular magnetic resonance and cardiac computed tomography. Along with clinical work and participation in multiple international courses on these imaging modalities, he is involved in research projects on ischemic heart disease employing magnetic resonance.