Clin Res Cardiol (2013) 102:169–170
DOI 10.1007/s00392-012-0514-5

LETTER TO THE EDITORS

Primary prevention of sudden cardiac death with an entirely subcutaneous defibrillator in a patient with a large right atrial thrombus

Christof Kolb · Carsten Lennerz · Verena Semmler · Clemens Jilek

Received: 8 June 2012 / Accepted: 20 September 2012 / Published online: 28 September 2012

Sirs:

The entirely subcutaneous implantable cardioverter defibrillator represents an innovative new technique for protecting patients from sudden cardiac death. The presented case refers to the implantation of such a system in a 75-year-old male with coronary artery disease, impaired left ventricular function (ejection fraction 31 %) and permanent atrial fibrillation, who presented for primary preventive placement of an implantable cardioverter defibrillator (ICD) after the occurrence of non-sustained ventricular tachycardia of up to 15 beats. Routine transthoracic echocardiography disclosed a large (29 × 28 × 30 mm) right atrial mass which in the subsequent transoesophageal echocardiography appeared highly suggestive of a thrombus (Fig. 1a). Contrast enhanced cardiac magnetic resonance imaging confirmed the etiology of a thrombus and gave no hint to the presence of a tumor. Uncommonly, the thrombus had developed under a therapy of phenprocoumon (INR documented between 2.0 and 3.0) and ASS and did not show signs of regression after 2 months of intensified anticoagulation (INR 3.0–3.5). The patient was supplied with an entirely subcutaneous ICD system (SQ RX 1010, Cameron Health, San Clemente, CA, USA) (Fig. 1b). During a follow-up of 6 months neither device complications nor arrhythmias have been encountered and the patient is doing fine.

Although rare, intra-cardiac thrombi can develop despite adequate anticoagulation and negative thrombophilia screening [1]. Transvenous lead passage around the right ventricular thrombus might have been challenging but feasible. This was not attempted because it was feared that the added foreign body would have increased the risk of further thrombus creation. Due to the lack of thrombus regression during intensified anticoagulation, a wearable cardioverter-defibrillator was not deemed as a suitable solution in terms of "bridge-to-thrombus-regression". Instead, an entirely subcutaneous defibrillator was implanted.

Our case represents an unusual indication for the entirely subcutaneous defibrillator, which has previously been proposed for niche indications such as difficult venous access, inability to reach the right ventricle transvenously, primary electrical disease, congenital heart disease [2–4] or even broader use [5].

Conflict of interest C.K. has received lecture honorary from Biotronik, Boston Scientific, Medtronic, St. Jude Medical and Sorin; he is a consultant to Biotronik and Sorin and performs/has performed clinical studies that are/have been supported by Biotronik, Medtronic, St. Jude Medical, Sorin and Stereotaxis.

References

1. Hidalgo-Olivares VM, Cordoba-Soriano JG, Barambio-Ruiz M, Valle-Munoz (2011) Double mechanical prosthesis, correct international normalized ratio, and giant atrial mass. Eur Heart J 32:2524
2. Bardy GH, Smith WM, Hood MA et al (2010) An entirely subcutaneous implantable cardioverter-defibrillator. N Engl J Med 363:36–44
3. Jarman JW, Lascelles K, Wong T, Markides V, Clague JR, Till J (2012) Clinical experience of entirely subcutaneous implantable cardioverter-defibrillators in children and adults: cause for caution. Eur Heart J 33:1351–1359
4. Cappato R, Smith WM, Hood MA et al (2012) Subcutaneous chronic implantable defibrillation systems in humans. J Interv Card Electrophysiol 34:325–332
5. Dabiri Abkenari L, Theuns DA, Valk SD et al (2011) Clinical experience with a novel subcutaneous implantable defibrillator system in a single center. Clin Res Cardiol 100:737–744

C. Kolb (✉) · C. Lennerz · V. Semmler · C. Jilek
Deutsches Herzzentrum München, Klinik für Herz- und Kreislauferkrankungen, Faculty of Medicine, Technische Universität München, Lazarettstr. 36, 80636 Munich, Germany
e-mail: kolb@dhm.mhn.de

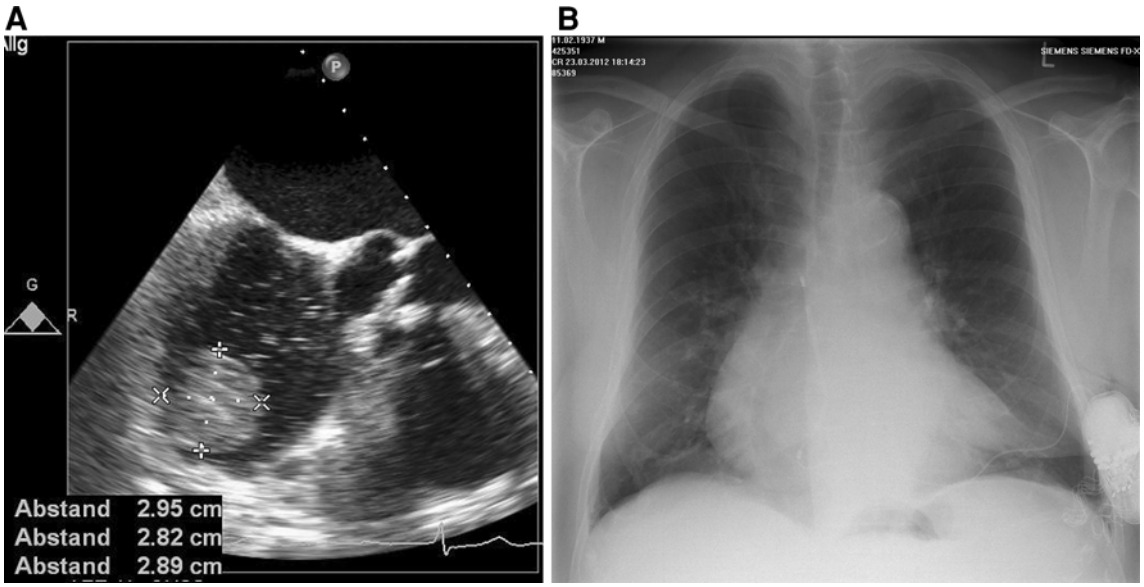

Fig. 1 Right atrial thrombus of approx. 29 mm diameter in transesophageal echocardiography (a) and subsequently implanted entirely subcutaneous defibrillator (b)