Atrial reentry tachycardia in the native part of the right atrium after heart transplant. Should we always ablate?

Krzysztof Myrda[1], Piotr Buchta[2], Grzegorz Ciszewski[3], Mariusz Gąsior[1,4]

1 3rd Department of Cardiology, Silesian Center of Heart Diseases, Zabrze, Poland
2 Silesian Center of Heart Diseases, Zabrze, Poland
3 Boston Scientific, Warsaw, Poland
4 Faculty of Medical Sciences in Zabrze, Medical University of Silesia, Katowice, Poland

A 37-year-old young woman, after orthotopic heart transplantation using the Lower and Shumway method performed 16 years prior due to advanced nonischemic heart failure, was admitted to our department. The reason for referring the patient to the hospital was a history of paroxysmal palpitations that had become increasingly frequent and were associated with severe fatigue. Twelve-lead electrocardiography recorded on admission is presented in FIGURE 1A. Based on collected data, after excluding potentially reversible causes of arrhythmias, for example, acute transplant rejection, we referred the patient for invasive electrophysiology using the 3-dimensional electroanatomical system, Rhythmia HDx (Boston Scientific Corp., Cambridge, Massachusetts, United States). After advancing a 10-pole catheter into the coronary sinus and 64-pole basket mapping catheter (IntellaMap Orion, Boston Scientific, Cambridge, Massachusetts, United States) into the right atrium, we observed the intracardiac potentials as shown in FIGURE 1B. An in-depth analysis of intracardiac signals and performed pacing maneuvers revealed dissociation of the sinus rhythm and tachycardia electrograms, indicating that both parts of the atrium were activated independently. That was confirmed by high-density activation maps of sinus rhythm in the donor atrium (FIGURE 1C) and tachycardia in the recipient atrium (FIGURE 1D and 1E) as well. A programmed and burst pacing protocols from the donor part of the right atrium and the right ventricle apex could not induce any tachycardia.

In orthotopic heart transplant performed using the biatrial technique, the atria of the donor are attached to the preserved posterior wall of the right and left atria of the recipient. Both the remaining atrial tissue (recipients) and the transplanted heart contain sinoatrial nodes, which provide independent pacing for the corresponding part of the atria. In addition, this promotes macroreentry tachycardias both within donor and recipient parts.[1] The bridge between the recipient and donor atria may function as a critical isthmus.[2] Therefore, the diagnosis of arrhythmia in the recipient atrium requires searching for conduction bridges to the donor atrium. High-density activation mapping of both atria provides valuable information on the mechanism of arrhythmia and could facilitate the therapeutic decision-making process. Evidence of electrical independence between the recipient and donor atria seems to be sufficient to decide not to restore sinus rhythm in the recipient atrium using either cardioversion or ablation.[3,4] If a bridge, bridges, or macrorentry tachycardia in the recipient atrium are detected, they should be ablated. Due to reported palpitations, it also seems appropriate to perform a programmed and burst pacing protocol from the donor atrium, also during isoprenaline infusion.[5]

Correspondence to:
Krzysztof Myrda, MD, PhD,
3rd Department of Cardiology,
Silesian Center for Heart Diseases,
ul. M. Curii-Skłodowskiej 9,
41-800 Zabrze, Poland,
phone: +48 32 373 38 60, email:
k_myrda@interia.pl
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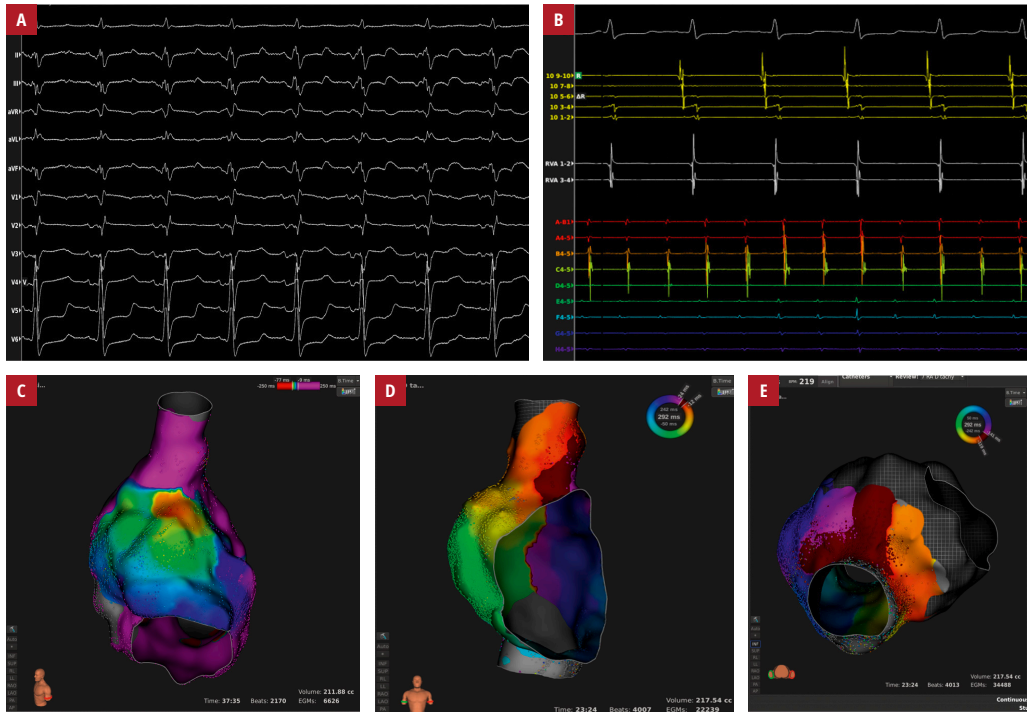

FIGURE 1 **A** – twelve-lead electrocardiography in a woman after orthotopic heart transplantation; **B** – endocardial signals recorded from the 4-pole catheter placed in right ventricle apex, 10-pole catheter placed in the coronary sinus with proximal to distal activation sequence with a tachycardia cycle length of 590 ms and a 64-pole basket mapping catheter in the right atrium, which revealed a tachycardia cycle length of 275 ms; **C** – a high-density activation map of sinus rhythm preserved in the donor atrium; **D**, **E** – high-density activation map showing macroreentry tachycardia in the recipient atrium

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