

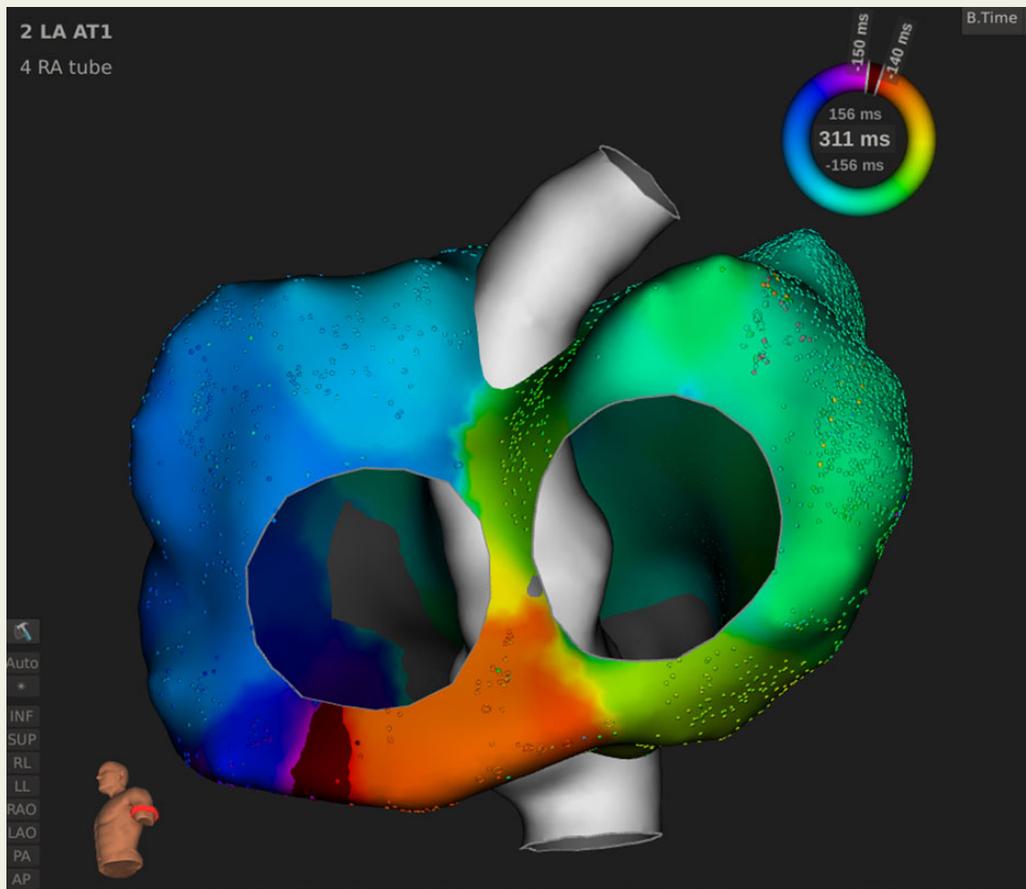
High-density biatrial activation mapping during typical atrial flutter after bicavopulmonary bypass

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A 35-year-old man with a complex univentricular congenital heart disease (double inlet left ventricle with levo-transposition of the great arteries) was referred for recurrent atrial tachycardia. He underwent Fontan surgical procedure at age 8 and total cavopulmonary connection at age 22. Tricuspid valve was closed by a prosthetic patch remote from the annulus (for coronary sinus draining) during the first surgical palliation. An acquired pre-excitation was noted since this first palliation. The Fontan conversion was performed with an intra-cardiac



unfenestred tube placed through the atrial bulge, together with a septostomy (for Thebesius veins draining) and a right Maze procedure.

He manifested with recurrent right atrial tachycardia and typical atrial flutter for around 13 years despite antiarrhythmic drugs, leading to repeated radio-frequency (RF) ablation procedures.

Access to the atrial bulge was performed through retrograde aortic route, passing through the single ventricle then retrogradely crossing the mitral annulus. The Rhythmia™ system (Boston Scientific) was used for mapping.¹ Access to the left atrium and right atrium through the atrial septal defect was possible with the Orion™ catheter, even allowing mapping around the intra-cardiac tube for reaching the most anterior and lateral parts of the right atrium. The activation reference catheter was placed inside the intra-cardiac tube by venous femoral access, demonstrating far-field atrial potentials.

Mapping of both atria was performed in 32 min (28 669 activation points), revealing a counterclockwise typical atrial flutter, with post-pacing interval matching the tachycardia cycle length at the lateral border of the cavo-tricuspid isthmus (CTI). Unsuccessful RF applications were first delivered into the sub-hepatic veins and inside the intra-cardiac tube (because of the closed anatomical location to the CTI and of local atrial potentials), then on the ventricular aspect of the CTI. Finally, positioning the ablation catheter on the anterior part of the CTI and delivering a 30 W irrigated RF application led to termination of the tachycardia. Cavo-tricuspid isthmus block could only be controlled by

demonstrating the descending activation pattern inside the tube by pacing the low lateral part of the right atrial free wall. The whole procedure duration was 210 min with 54 min fluoroscopy. The patient did not complain of any recurrence over the following 3 months.

This case highlights the advantages of high-density mapping and the possibility of retrograde access to the atrium in case of previous total cavopulmonary connection for univentricular heart.

Conflict of interest: S.C. is employed by Boston Scientific.

Reference

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