Catheter ablation for AV nodal reentrant tachycardia in absent right and persistent left SVC

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Case

A 65-year-old man was re-evaluated for recurrent narrow QRS tachycardia. Twelve months ago, a cardiac electrophysiological study (EPS) failed to induce tachycardia, but revealed absent right and persistent left superior vena cava (SVC). A cardiac CT scan was obtained for image integration before EPS. The electroanatomical mapping system was used with CartoMerge software (Biosense-Webster, Diamond Bar, CA). The figure shows 3D images reconstructed by image integration software. The reconstructed images clearly prove the absence of right SVC as well as persistent left SVC with markedly dilated coronary sinus (Figure, A–D). Atrioventricular nodal reentrant tachycardia (AVNRT, slow/fast type) was reproducibly induced by programmed electrical stimulation. Catheter ablation was successfully performed at the rim of the coronary sinus ostium just below the His-bundle potential area (Figure, E). After ablation, tachycardia was not inducible.

Discussion

Persistent left SVC alone is not uncommon, but a case with absent right and persistent left SVC is a rare congenital anomaly, Koch’s triangle, which is surrounded by the tendon of Todaro and the coronary sinus ostium, is a critical structure in catheter ablation for AVNRT. However, the anatomical structure of this area is severely deformed in this congenital anomaly due to a markedly dilated coronary sinus. Therefore, the anatomical information is important and the ablation procedure is challenging. In the previous reports, successful ablation sites were not usually slow–pathway areas but the rim of the coronary sinus ostium near the atrioventricular node as the present case. A 3D mapping system can give us more precise anatomical information to help to target the appropriate site. In the present report, we demonstrate usefulness of an electroanatomical mapping system, and provide images with rich anatomical information. A catheter navigation system may facilitate the procedure as well.
References


Figure (A), (B) and (C) are posterior, right anterior oblique, and anterior view images excluding the left ventricle, respectively. Asterisks indicate markedly dilated coronary sinus and persistent left superior vena cava. Image excluding both ventricles and the left atrium (D). Endoscopic view of the ablation site (E). Dark red dots indicate catheter ablation sites, and blue dots indicate area showing His bundle potential.