A rare case of persistent left superior vena cava with absent right superior vena cava

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A 28-year-old man underwent transthoracic echocardiography (TTE) following an abnormal electrocardiogram. Parasternal long-axis images revealed a dilated coronary sinus measuring 15 mm x 25 mm (Panel A), raising the possibility of a persistent left superior vena cava (SVC). Bubble contrast TTE using agitated saline injected from the left antecubital vein resulted in opacification of the coronary sinus (*) before filling of the right atrium (Panels B and C, Supplementary material online, Video S1). This confirmed the presence of a persistent left SVC with drainage into the coronary sinus. Agitated saline injected from the right antecubital vein, unexpectedly, also resulted in filling of the coronary sinus prior to opacification of the right atrium, indicating absence of the right SVC with drainage of the entire upper body venous return to the right atrium via the coronary sinus (Panels D and E, Supplementary material online, Videos S2 and S3).

Persistent left SVC occurs in approximately 0.3–0.5% of the general population. Coexistent absence of the right SVC is caused by obliteration of the right cardinal vein during embryogenesis and is extremely rare. Anomalous thoracic venous drainage is often asymptomatic and diagnosed incidentally. Complications may arise with procedures requiring upper limb venous access including venous catheter placements and transvenous pacing. Inadvertent coronary sinus cannulation may result in vessel perforation or arrhythmia. In patients requiring cardiac surgery, anomalous venous anatomy is relevant for planning retrograde cardioplegia and placement of venous catheters in cardiopulmonary bypass. A systematic diagnostic approach can allow identification of rather complex anomalous drainage patterns with simple bedside tests.

Supplementary material is available at European Heart Journal online.

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