When Side Matters

Contrast Echocardiography With Injection From the Left Antecubital Vein to Detect a Persistent Left Superior Vena Cava Draining to the Left Atrium in a Patient With Cerebral Stroke

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An 8-year-old boy underwent surgical ventricular septal defect closure and tricuspid valvuloplasty. At 25 years of age, he underwent percutaneous closure of a hemodynamically significant residual ventricular septal defect with a 16-mm muscular ventricular septal defect Amplatzer occluder. Three years later, he experienced an ischemic stroke in the right sylvian area. He underwent complete investigation to look for ischemic causes and transesophageal echocardiography to rule out a cardioembolic source. No thrombus was seen either on the ventricular septal defect device or in the left atrial appendage. Contrast echocardiography from the right antecubital vein showed no significant right-to-left shunt at the interatrial level (Figure, top left, and Movie I in the online-only Data Supplement). As part of our protocol, the injection was repeated from the left antecubital vein. A massive right-to-left shunt was clearly shown (Figure, top right, and Movie II in the online-only Data Supplement). The patient underwent angiography that demonstrated a persistent left superior vena cava draining directly into the left atrium (Figure, bottom left, and Movie III in the online-only Data Supplement). This anomaly may occur in 0.3% to 0.5% of the general population and in 2% to 10% in subjects with congenital heart disease. In <10%, the persistent left superior vena cava drains directly into the left atrium rather than into the right atrium through the coronary sinus. It is reported as a cause of systemic desaturation and brain abscess. A 10-mm Amplatzer muscular ventricular septal defect occluder was used to embolize the left superior vena cava (Figure, bottom right, and Movie IV in the online-only Data Supplement). We suggest performing injection of echo contrast from the left antecubital vein rather than the traditional right. In this way, a rare but possible cause of paradoxical embolism and ischemic stroke may be discovered.

Disclosures

None.

Figure. Top left, Transesophageal 45° midesophageal view with contrast injection from the right antecubital vein showing opacification of the right atrium (RA) and no opacification of left atrium (LA). Top right, Transesophageal 45° midesophageal view with contrast injection from the left antecubital vein showing significant opacification of the LA and mild opacification of RA. Bottom left, Anteroposterior angiography in the left superior vena cava (LSVC) showing drainage into the LA. Bottom right, A 10-mm Amplatzer muscular ventricular septal defect occluder has been used to embolize the LSVC.
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