Non-invasive cardiac imaging to unmask a very uncommon aetiology of an embolic stroke

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A 66-year-old healthy man admitted for an acute renal colic suddenly experienced a brief episode of loss of consciousness followed by persistent superior left arm hyposthenia during i.v. infusions of a non-steroidal anti-inflammatory drug using a standard antecubital right vein access (ARVA). A magnetic resonance imaging (MRI) scan showed a stroke with an embolic pattern. Carotid and vertebral Doppler scans, thrombofilic screening, and 24-h Holter were normal. Finally, an echocardiography was performed to rule out a cardiac embolic source. Dilatation of coronary sinus (CS; 15 mm) was evident after careful inspection of transthoracic parasternal long-axis view (Panel A). Therefore a transthoracic echocardiogram was performed during injection of agitated saline solution into the ARVA micro-bubbles unexpectedly filled directly the left atrium (LA) without passing through the right atrium (RA; Panel B and see Supplementary data online, Video S1), unmasking a partial anomalous systemic venous return into the LA contrast-enhanced CT angiography was performed demonstrating the presence of a right-sided Superior Vena Cava (SVC) meeting the right superior pulmonary vein before entering into the LA, and a persistent left SVC that drains into the RA via the CS (Panel C and D). No other cardiac abnormalities were present. The strictly time-to-event relation between i.v. drug infusion in ARVA and occurrence of stroke during ED stay strongly supported the hypothesis of iatrogenic embolic event. A congenital isolated right SVC drainage into the LA is extremely rare: so far only 20 cases have been reported. This is the first case in which this anomaly was suspected and unmasked in a sudden iatrogenic stroke only by performing echo-imaging.

Conception and design: A.C., E.C., and F.O. Acquisition of data: A.C., F.O., and G.C. Drafting of the manuscript: A.C. and E.C. Critical revision of the manuscript: E.C. Supervision: A.C. and E.C.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.