Clinical vignette

Ventricular tachycardia and cardiac sarcoidosis: correspondence between MRI and electrophysiology

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A 44-year-old woman with a history of histologically proved pulmonary and mediastinal sarcoidosis and chronic atrial fibrillation presented with palpitations followed by syncope. Clinical examination was normal except for arrhythmia and discrete swelling of the ankles. ECG showed the onset of ventricular tachycardia (VT) [ventricular rate 210 b.p.m. and left bundle branch block (BBB) contour and horizontal axis] with sudden hypotension and lipothymia leading to external defibrillation. Subsequent ECG tracings showed sinus rhythm (50 b.p.m.) and complete right BBB. Biology was normal except for the elevated serum angiotensin-converting enzyme. Chest X-ray and CT showed pathological mediastinal nodes and pulmonary nodules related to sarcoidosis. Echocardiography showed subnormal L VEF at 55% with mild global hypokinesia. Coronary angiography was normal.

Cine MRI showed akinesia and mild dilation of the laterobasal and infundibular portion of the RV and hypokinesia of the basal anteroseptal segment and anterior wall of the LV.

Contrast (Gd-DTPA)-enhanced MRI in short axis views (from base to apex: Panel A(a–d)) showed marked delayed enhancement of the basal lateral wall of the RV (arrow no. 1), basal anteroseptal (arrow no. 2), and apical anterior epicardium (basal, mid-LV, and apex) of the LV (arrow no. 3).

Endocavitary ventricular stimulation induced two different VT morphologies: VT with left BBB contour and horizontal axis (280 ms RR interval) compatible with VT originating from the basal lateral wall of the RV (Panel B) and VT with right BBB contour and vertical axis (280 ms RR interval) compatible with VT originating from the basal anteroseptal and/or anterior segments of the LV (Panel C).

Final diagnosis was right and left ventricular cardiac sarcoidosis with two different inflammatory locations complicated by syncopal lateral right VT and basal anteroseptal left VT.

Panel A (a–d): Contrast (Gd-DTPA) enhanced MRI in basal to apical short axis views (a–d) showing marked delayed enhancement of both the basal lateral wall of the RV (white arrow no. 1), basal anteroseptal (arrow no. 2) and anterior epicardium (basal, mid-LV and apex) of the LV (white arrow no. 3).

Panel B: 12-lead endocavitary tracing showing ventricular tachycardia with left BBB contour and horizontal axis (280 ms RR interval) compatible with VT originating from the basal lateral wall of the RV.

Panel C: 12-lead endocavitary tracing showing ventricular tachycardia with right BBB contour and vertical axis (280 ms RR interval) compatible with VT originating from the basal anteroseptal and/or anterior segments of the LV.