Dilated right cardiac chamber delusion solved by cardiovascular magnetic resonance

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A previously healthy 59-year-old woman complained of palpitations and breathlessness. Two relatives had sudden cardiac death, including a sibling with dilated cardiomyopathy. Her electrocardiogram showed sinus rhythm and incomplete right bundle branch block. Transthoracic echocardiography (TEE) revealed a dilated right ventricle (RV) with normal systolic function and moderate tricuspid regurgitation (estimated pulmonary artery systolic pressure 45 mmHg); no other alterations were found.

Suspicion of arrhythmogenic RV cardiomyopathy (ARVC) was raised and a cardiovascular magnetic resonance (CMR) was performed. Steady-state free precession CINE images confirmed a dilated RV (indexed end-diastolic volume 159 ml/m²), with no regional akinesia or dyskinesia (Fig. 1A and 1B). No focal myocardial fibrosis was detected (Fig. 1C). Phase contrast sequences acquired at the aortic root and pulmonary trunk uncovered a significant left-to-right cardiac shunt (Qp / Qs = 2). CINE sequences directed to the inter-auricular septum revealed an ostium secundum atrial septal defect (ASD), measuring approximately 13 – 11 mm with a shunt of 39 ml (Fig. 2). MR-angiography identified partial anomalous pulmonary venous connec-
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Right chambers dilatation is a common manifestation in several pathologies, namely ARVC and congenital heart disease with left-to-right shunting. When first line echocardiography is equivocal or inconclusive, CMR can provide additional information. In this particular patient, suggestive findings of anomalous drainage, such as dilated superior vena cava and fewer than four pulmonary veins connecting to the left atrium, were inconspicuous. Moreover, ASD – the most typical finding associated with PAPVC – was also unrecognized.

This clinical case highlights CMR use in the study of dilated right cardiac chambers, and the relevance of a systematic evaluation of Qp/Qs.

References