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Left ventricular involvement in arrhythmogenic right ventricular cardiomyopathy assessed by cardiac magnetic resonance imaging: a case report

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Topic(s):
Myocardial Disease – Clinical

Citation:
Introduction: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is an inherited myocardial disease characterized by fibro-fatty replacement of the right ventricle (RV) and is considered the second most prevalent cause of sudden cardiac death (SCD) in young and athletes. The disease is usually manifested by paroxysms of life-threatening ventricular arrhythmias. We reported a case of a man affected by this rare cardiomyopathy which was manifested by left ventricular (LV) involvement.

Case report: We describe a case of a 46-year-old male who referred to our clinic presenting with complains of palpitations and irregular heartbeats. The patient presented with a history of palpitations for many years for which he received amiodarone and bisoprolol. During hospital treatment, the patient developed a paroxysm of hemodynamically unstable wide complex ventricular tachycardia (VT) which was treated by electrical cardioversion. He underwent coronary angiography which did not detect any hemodynamically significant stenoses of coronary arteries. The family history was unremarkable. The 24-hour Holter ECG monitoring revealed sinus rhythm with an episode of monomorphic VT consisting of 5 ventricular complexes with a ventricular rate of 120 bpm and without clinical manifestation. The transthoracic echocardiography revealed concentric hypertrophy of LV, enlargement of RV and right atrium (RA). The left ventricular ejection fraction (LVEF) was estimated 45% with no regional LV asynergy. The RV diameter at the basal level was 60 mm. The aneurysm was present in the subvalvular region and along the lateral wall of RV. The Doppler examination revealed 1st degree mitral regurgitation and 3rd degree tricuspid regurgitation. The patient was preliminary diagnosed with stable ventricular tachycardia, syncope, arrhythmogenic shock, status after electrical cardioversion and arrhythmogenic right ventricular dysplasia/cardiomyopathy. The cardiac magnetic resonance imaging (MRI) study was performed for confirmation of clinical diagnosis which revealed the presence of LV aneurysm, RV free wall aneurysm and dilatation (Fig. 1A). The late gadolinium enhancement (LGE) showed the presence of RV fibrosis (Fig. 1B). The patient underwent the implantation of a dual-chamber implantable cardioverter defibrillator (ICD) for the secondary prevention of SCD. Conclusion: Possible biventricular involvement should be considered in ARVC in radiological studies and may be misdiagnosed by echocardiography. The cardiac MRI has a key role in finding biventricular involvement in this form of cardiomyopathy.
Left ventricular involvement in arrhythmogenic right ventricular cardiomyopathy assessed by cardiac magnetic resonance imaging: a case report

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Figure 1. Cardiac magnetic resonance imaging. A-Cine study: Long axis view shows RV dilatation with dyskinesia and LV aneurysm (arrows); B-short axis view after LGE reveals RV wall fibrosis (arrow). LV=left ventricle; RV=right ventricle.