Ventricular tachycardia in hypertrophic cardiomyopathy with apical aneurysm successfully treated with left ventricular aneurysmectomy and cryoablation

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A 64-year-old woman with type II diabetes mellitus was admitted to our institution with incessant ventricular tachycardia. She reverted to sinus rhythm after treatment with intravenous amiodarone, but the tachyarrhythmia recurred days later. Coronary angiography showed unobstructed coronary arteries. Left ventriculography (Panel A, Supplementary material online, Video S1) revealed apical ballooning with mid-ventricular obstruction, suggestive of either large left ventricular (LV) apical aneurysm or stress (Takotsubo) cardiomyopathy. Transthoracic echocardiography and cardiac magnetic resonance imaging (Supplementary material online, Video S2) subsequently demonstrated mid-ventricular hypertrophic cardiomyopathy (HCM) with apical wall thinning, confirming LV apical aneurysm. She underwent LV aneurysmectomy together with patch LV reconstruction and ventricular cryoablation (Panels B–D). A cardioverter-defibrillator was implanted 3 weeks post presentation. At follow-up 12 months later, she is well without evidence of arrhythmia recurrence and is not taking antiarrhythmic medication.

HCM is complicated by apical aneurysm in 2% of cases. Apical aneurysm is thought to develop due to apical wall stress caused by dynamic mid-ventricular obstruction. Pathologically, the aneurysm consists of fibrous tissue, an arrhythmogenic substrate for the generation of ventricular tachyarrhythmias. Genetic predisposition and familial transmission of the LV apical aneurysm phenotype have been documented. The presence of apical aneurysm in HCM portends a poor prognosis. Clinical manifestations include tachyarrhythmias, heart failure, myocardial infarction, LV thrombus formation, embolic stroke, and sudden death. Management options in addition to standard cardiac failure therapy may include antiarrhythmic agents, systemic anticoagulation, cardioverter-defibrillator implantation, radiofrequency ablation of malignant ventricular dysrhythmias, and surgical resection of the aneurysm.

Surgery with complete excision of the scar tissue and obliteration of the aneurysmal pouch has been reported to decrease the burden of ventricular tachyarrhythmias.

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Panel A. Left ventriculogram image in the right anterior oblique view demonstrating a large apical aneurysm.

Panels B–D. At surgery, the apical aneurysm is exposed via median sternotomy (Panel B), and resected (Panel C). Following ventricular cryoablation, a patch reconstruction is performed (Panel D).

Supplementary material is available at European Heart Journal online.