Hypertrophic cardiomyopathy involving the right ventricular apex

Georgios K Efthimiadis MD¹, Georgios Spanos MD MSc², Georgios Giannakoulas MD¹

A 19-year-old woman with hypertrophic cardiomyopathy (HCM) was referred for clinical assessment. She had no dyspnea, chest pain, syncope or family history of sudden death. The patient's blood pressure was 100/60 mmHg, and a grade 3/6 to 4/6 systolic ejection murmur was present at the apex. Her 59-year-old mother also had HCM. An electrocardiogram showed diffuse T wave inversion. Maximum left ventricular (LV) wall thickness, as assessed by echocardiography, was 35 mm, and the Doppler-estimated LV outflow gradient at rest was 32 mmHg. The patient had a marked reduction in systolic blood pressure during upright exercise, while no episodes of nonsustained ventricular tachycardia were detected on a 48 h electrocardiogram. Cardiac magnetic resonance imaging showed increased thickness of the septum (39.3 mm) and the apex of the right ventricle, as well as massive

delayed enhancement at the hypertrophied septum and apex. Based on the extreme LV hypertrophy and the abnormal blood pressure response during exercise, cardioverter defibrillator implantation was recommended for primary prevention of sudden death.

HCM involving the right ventricular apex is rare, and cardiac magnetic resonance imaging is the imaging modality of choice for diagnosis.

Four-chamber gradient echo sequence (Figure 1A), short-axis, T1-weighted spin echo sequence (Figure 1B) and four-chamber delayed enhancement imaging (Figure 1C) showed increased thickness of the septum and the apex of the right ventricle, as well as massive enhancement (bright signal) at the hypertrophied septum and apex.

Figure 1 Increased thickness of septum and the apex of the right ventricle (RV) shown by four-chamber gradient echo sequence (A), short-axis, T1-weighted spin echo sequence (B) and four-chamber delayed enhancement imaging, demonstrating massive enhancement at the hypertrophied septum and apex (C). LV Left ventricle

¹First Department of Cardiology, Aristotle University; ²Eurodiagnosis Medical Imaging Center, Thessaloniki, Greece

Correspondence: Dr Georgios K Efthimiadis, First Department of Cardiology, Aristotle University, 30 Agias Sofias Street, 546 23 Thessaloniki, Greece. Telephone 30-23-10-99-4830, fax 30-23-10-99-4673, e-mail efthymos@med.auth.gr

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