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A Case of Ventricular Noncompaction with Brugada-Like Electrocardiography Pattern

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We report the case of an 18-year-old man with a ST-segment elevation in the right precordial leads (Fig. 1). Electrocardiography (ECG) abnormalities were confirmed during medical examination for military enlistment. He had no known underlying disease and no history of fainting or arrhythmia. His grandfather had undergone surgery for an implantable cardioverter defibrillator placement, and had died suddenly at the age of 60 years.

The patient underwent transthoracic echocardiography (TTE), showing noncompaction areas in both ventricles. TTE revealed a hypertrabeculated and spongiform appearance on both ventricular apical segments (Fig. 1). Color Doppler echocardiographic examination revealed blood flow in the deep intertrabecular recesses. In a cardiac magnetic resonance (CMR) imaging, endocardial noncompaction was noted at the apical level in the both ventricles (Fig. 2). A four-chamber balanced steady-state free precession (bSSFP) CMR image showed a thinned myocardium at the apex and lateral wall (*yellow asterisk*) with prominent myocardial trabeculations (*asterisk*) (Fig. 2C).

In the present case, neither dynamic ECG changes nor exercise-induced ventricular tachycardia were identified. However, a basal ECG strongly indicated Type 2 Brugada-like ECG; left ventricle (LV) and right ventricle (RV) non-

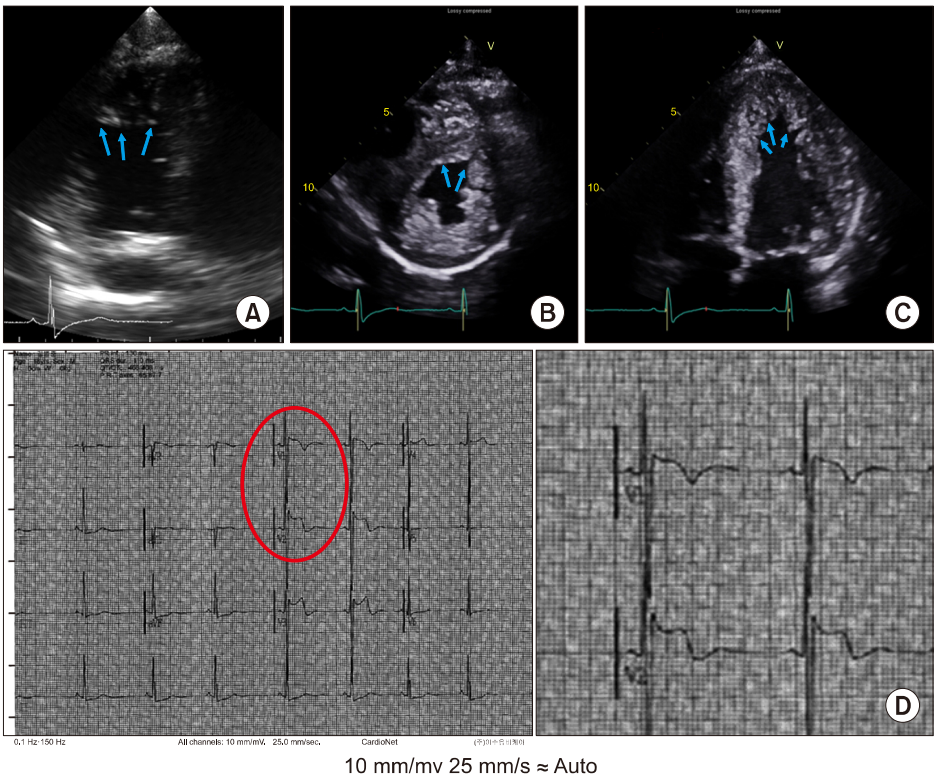

FIG. 1. Hypertrabeculation of the apical part of the right and left ventricle. (A) right ventricle at modified apical four-chamber view, (B) left ventricle at parasternal short-axis view, (C) left ventricle at apical four-chamber view. (D) The 12-lead electrocardiography (ECG) with ST-segment elevation in the right precordial leads.

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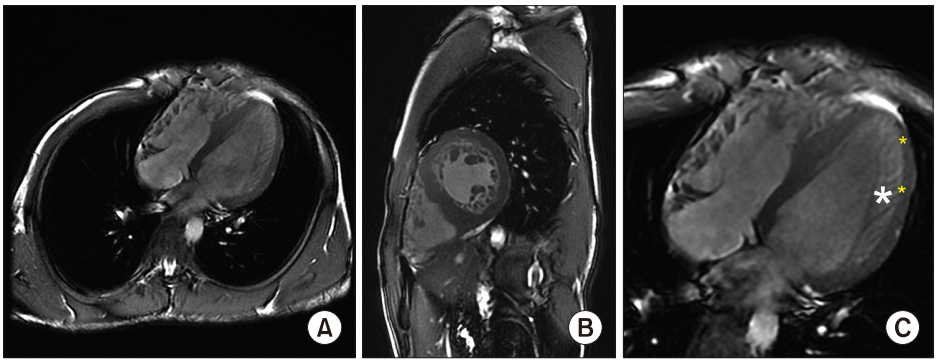

FIG. 2. (A) Four-chamber view: Both right ventricle and left ventricle show hypertrabeculation in apex with typical 2-layer structure of the myocardium like in noncompaction cardiomyopathy. (B) Apical short-axis view demonstrating excessive apical to midventricular hypertrabeculation. (C) A four-chamber balanced steady-state free precession (bSSFP) cardiac magnetic resonance imaging shows a thinned myocardium at the apex and lateral walls (*yellow asterisks*) with prominent myocardial trabeculations (*asterisk*).

compactions were confirmed by TTE. In this case, the coexistence of the Brugada-type electrocardiographic pattern and both ventricular noncompactions might have been coincidental. However, studies have reported the existence of patients with Brugarda syndrome and structural heart disease.[1-4] When associated with LV dysfunction, hypertrophy, or congenital heart disease, the genetic cause may overlap. Mutations in the Sodium Voltage-Gated Channel Alpha Subunit 5 (*SCN5A*) have been reported in Japanese patients with LV noncompaction.[5] In this case, the genetic mutation was not tested. However, genetic mutation and cardiomyopathy overlap or correlation between the Brugada-like ECG and both ventricular noncompactions cannot be excluded.

CONFLICT OF INTEREST STATEMENT

None declared.

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