Left ventricular non-compaction and dyssynchrony

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A 43-year-old man with a history of alcohol abuse was admitted for shortness of breath. His electrocardiogram showed right-axis deviation and a complete left bundle branch block (QRS = 160 ms) indicating a significant conduction delay in the left ventricle (LV) (Panel A). On admission, he had jugular vein distension to 10 cm, bibasilar rales, and a BNP = 2957 pg/mL. Transthoracic echocardiography revealed the LV myocardium to be a two-layered structure consisting of a thin compacted epicardial layer (C) and a much thicker non-compacted endocardial layer (N). The trabeculations were prominent on the lateral, inferolateral, and inferior walls from the mid-ventricle to the apex, meeting the Chin, Jenni, and Stoëlberger criteria (Panel B). The ejection fraction (modified Simpson’s method) was 15%, and end-diastolic LV diastolic diameter was 8.7 cm (Supplementary data online, Video S1).

Cardiovascular magnetic resonance imaging showed the N/C ratio of 3.1 in diastole (Panel C), fulfilling the Peterson criteria. No delayed myocardial enhancement is identified with Gadolinium (Panel D). Using velocity vector imaging analysis (Siemens, Erlanger, Germany), global peak systolic strain was severely decreased at −5.06%, and a maximum opposing wall delay was severely prolonged at 248.0 ms (Panel E, Supplementary data online, Video S2). This case describes severe dyssynchrony associated with (i) severe electrical conduction delay and (ii) severe hypokinesis in the regions most affected by non-compaction (Supplementary data online, Videos S1 and S3). Dobutamine was started. Digoxin, Hydralazine, Lasix, and Captopril were initiated and titrated. His symptoms improved from NYHA class IV to III. The condition stabilized and the patient was discharged home.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.

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