Assessment of variant forms of Takotsubo cardiomyopathy by two-dimensional speckle tracking echocardiography

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Three women without cardiac history presented with acute chest pain occurring after a stressful event. All of them had normal coronary angiogram, and left ventricular (LV) function had returned to normal at one month.

Case 1
The electrocardiogram (ECG) of this 34-year-old woman showed minimal T-wave changes in the anterior leads. Troponin T raised to 0.18 ng/mL (N < 0.014). Left ventriculography, showing a 35% ejection fraction (EF) and mid-LV akinesia (diastolic and systolic still-frames, Panels A and B, see Supplementary data online, Movies S1 and S2), and bull’s eye representation of longitudinal strain by two-dimensional (2D) speckle tracking echocardiography (2D-STE, Panel C) are consistent with midventricular Takotsubo cardiomyopathy.

Case 2
A 70-year-old lady presented with cardiac arrest, rapidly resuscitated but followed by cardiogenic shock. The ECG showed diffuse minor anterior leads ST depression. The creatine kinase (CK) level raised to 747 UI/L, and CK-MB isoenzyme to 23 ng/mL. Echocardiography showed basal LV akinesia (Panels D and E, and see Supplementary data online, Movie S3), consistent with reverse Takotsubo cardiomyopathy. LVEF was 54% at 1 week, with mild basal hypokinesia but persistent basal longitudinal dysfunction (Panel F).

Case 3
The ECG of this 65-year-old woman showed mild anterior ST-segment elevation and a peak of 0.053 ng/mL troponin T. Echocardiography and left ventriculography showed classical Takotsubo, with LV ballooning involving the apical and mid-segments, with basal hyperkinesia (Panels G–I, and see Supplementary data online, Movie S4 and S5).

These cases demonstrate the variable presentations of Takotsubo cardiomyopathy. The midventricular and reverse variants are much less frequent. Two-dimensional-STE bull’s eye representation further illustrates the characteristic longitudinal strain abnormalities. These patterns are not associated with coronary artery distribution. Their recognition helps to differentiate Takotsubo cardiomyopathy from an acute coronary syndrome.

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

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