Acute and Reversible Mid-ventricular Ballooning: An Atypical Form of Takotsubo Cardiomyopathy

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A 67-year-old woman was admitted to our hospital for hemorrhoidectomy. The patient was anesthetized with an epidural block with 2% lidocaine. After operation, her heart rate suddenly dropped from 70 beats per minute to nearly cardiac arrest. Atropine 1 mg and epinephrine 0.5 mg were given intravenously but in vain. The patient soon had ventricular tachyarrhythmia requiring defibrillation. She was intubated due to respiratory failure and acute pulmonary edema, which was demonstrated by the radiography of chest. Her electrocardiogram demonstrated sinus tachycardia with mild ST-segment elevation in leads V3-V6, II, III and aVF (Fig. 1B). On next day, she underwent cardiac catheterization for suspicion of acute myocardial infarction. Coronary angiography revealed absence of coronary artery stenosis. Her left ventriculogram demonstrated akinesis of the midventricular segments and hyperkinesis of the basal and apical segments (Fig. 2). After the onset of the event, the patient’s initial troponin I value was 0.860 ng/ml; at 6 hours, 4.7 ng/ml; at 12 hours, 10.5 ng/ml; at 36 hours, 5.7 ng/ml; and at 60 hours, 2.5 ng/ml. With supportive treatment, spontaneous clinical recovery developed within 5 days. Her electrocardiogram evolved diffuse T-wave inversion (Fig. 1C) and an echocardiogram performed 5 days after the episode showed recovery of wall motion (Fig. 3).

Takotsubo cardiomyopathy has been linked to emotional or physical stress resulting in transient left ventricular dysfunction and thought to be caused by sympathetic hyperactivity. It typically affects the mid and apical left ventricular segments in postmenopausal women. Takotsubo cardiomyopathy shows clinical symptoms and electrocardiogram findings consistent with acute myocardial infarction (1,2). Coronary angiography and left ventriculogram are indicated for the differential diagnosis. Supportive care is usually sufficient because left ventricular function usually recovers relatively quickly. Acute and reversible mid-ventricular ballooning, an atypical form of Takotsubo cardiomyopathy has been described, which shares all the characteristics of typical Takotsubo cardiomyopathy, with the exception that the wall motion abnormalities only involve the midventricular segments (3).
Fig. 1  A: Admission electrocardiogram showing normal sinus rhythm. B: Electrocardiogram after hemorrhoidectomy showing sinus tachycardia with mild ST-segment elevation in leads V3-V6, II, III and aVF suggesting ischemia. C: Electrocardiogram 3 days later demonstrating diffuse T-wave inversion

Fig. 2  Left ventriculogram showing akinesis of the midventricular segments and hyperkinesis of the basal and apical segments, creating mid-ventricular ballooning
Fig. 3 Left panels: Modified parasternal long-axis view on transthoracic echocardiogram during attack showing mid-ventricular ballooning. Right panels: Transthoracic echocardiogram 5 days later demonstrating recovery of wall motion

References