Acute MI and Acute MR: There is More Than Meets the Eye. Apical ballooning - Takotsubo cardiomyopathy

Clinical Case Portal

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Case Report

A 69-year-old hypertensive woman was referred to exercise test because of exertional shortness of breath. An echocardiographic study was within normal limits with borderline intraventricular septum

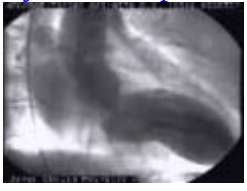
basal hypertrophy. The patient exercised up to stage III of Bruce protocol when she suddenly felt very weak and short of breath. Systolic blood pressure dropped to 70 mm Hg and a harsh 4/6 systolic murmur was heard over the precordium. ECG showed severe ST-elevation in all leads (fig. 1). Emergent catheterization showed normal coronary arteries (fig. 2) and extensive apical dyskinesis with severe mitral regurgitation (MR) (fig. 3). A 45 mm Hg gradient was noted at catheter withdrawal from the LV cavity to the aortic root. Transthoracic echocardiography (TTE) showed a large apical aneurysm with hypercontractile base of the heart, severe, eccentric, posteriorly directed mitral regurgitation (fig. 4) and 50 mm Hg LVOT obstruction (fig. 5). However the TTE study was not of a good enough quality to clarify the mechanism of the MR. Transesophageal echocardiography (TEE) showed systolic anterior motion of the anterior mitral leaflet with severe LVOT obstruction and mitral regurgitation (fig. 6). The patient received fluids and beta-blockers, the murmur disappeared and her clinical condition improved rapidly. There was a maximal CK raise of 760 U and subsequent ECG showed T-wave inversion in anterior leads. Predischarge echo showed normal left ventricular function without mitral regurgitation and LVOT obstruction (fig. 7).

Transient SAM with LVOT obstruction with severe MR due to a hypercontractile base of the heart in the presence of a large apical myocardial infarction is increasingly recognized as a possible complication of a large anterior MI. This complication is described in both patients with coronary artery disease and in those with normal coronary arteries and transient apical ballooning: the Takotsubo cardiomyopathy. A correct diagnosis is essential for proper management since these patients are expected to benefit from beta blockers rather than diuretics and vasodilators like those with the classical mechanical MR.

Fig. 1 :
ECG at peak exercise

Video 1 :
Apical balloning - Coronary angiography

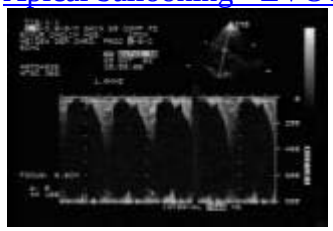
Video 2 :
Dyskinetic apical ballooning - Left ventricular injection



Video 3 :

Apical ballooning - mitral regurgitation - Emergency transthoracic echocardiography

Fig. 2 :
Apical ballooning - LVOT gradient



Video 4 :
Emergency TEE

Video 5 :
Apical ballooning - Predischarge TTE and TEE