Resting Systolic Anterior Motion of Mitral Valve Apparatus
Association With Apical Ballooning Syndrome

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Two patients, a 67-year-old man (patient 1) and a 72-year-old woman (patient 2), presented with sudden onset chest pain after significant emotional stress. Patient 2 also had acute pulmonary edema on presentation. An ECG showed ST elevation in the precordial leads, and the patient’s cardiac enzymes were elevated. A coronary angiogram showed no flow-limiting lesions. A left ventriculogram demonstrated the typical pattern of apical ballooning syndrome with basal hypercontractility and apical akinesis (Figure, A, and Movie I). The diagnosis of apical ballooning syndrome was made in both cases.

A transthoracic echocardiogram in patient 1 showed hypodynamic basal segments and mild upper septal hypertrophy with systolic anterior motion (SAM) of the mitral valve resulting in moderate left ventricular outflow tract (LVOT) obstruction (LVOT velocity, 3.7 m/s) (Figure, B and D). There was severe functional mitral regurgitation (MR) (Figure, C). Patient 2 had similar test results, with SAM of the mitral valve, moderate LVOT obstruction of 3.1 m/s and severe MR (Movies II and III).

Repeat echocardiograms at 2 to 4 months after initial presentation showed normal LV function and resolution of the LV wall motion abnormalities. Interestingly, residual SAM of the mitral apparatus without significant LVOT obstruction was found on the resting echocardiograms of both patients (Figure, E and F, and Movies IV and V). There was no residual MR.

The pathophysiology of apical ballooning syndrome is not fully understood. In our 2 cases, underlying SAM predisposed the patients to the development of LVOT obstruction and dynamic MR in the context of apical ballooning syndrome. The use of inotropes in this situation would be likely to worsen the LVOT obstruction and MR and should be avoided. Chronic β-blocker administration may ameliorate the degree of LVOT obstruction and consequent adverse hemodynamics in future presentations.

Disclosures

None.

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The online-only Data Supplement, which contains Movies I through V, is available with this article at http://circheartfailure.ahajournals.org/cgi/content/full/1/1/84/DC1.

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Figure. A, Left ventriculogram of patient 1 showing the typical pattern of apical ballooning syndrome. Transthoracic echocardiogram in patient 1 at admission showing SAM of the mitral valve with LVOT obstruction (B) and severe MR (C). D, Continuous-wave Doppler profile outlining the degree of LVOT obstruction. The recovery echocardiogram 8 weeks later showed nonobstructive SAM (E) and resolution of the MR (F).
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