An Unusual Cause for Mitral Valve Fluttering*

Michael Mumford, M.D.,** and Ravi Prakash, M.D., F.C.C.P.†

A 23-year-old patient with patent ductus arteriosus had coarse diastolic fluttering of the mitral valve leaflets on the echocardiogram in the absence of usual causes.

Echocardiographically-recorded fluttering of the mitral valve has been described in patients with atrial fibrillation, atrial flutter,1,2 aortic regurgitation,3,4 mitral insufficiency,5 and ventricular septal defect.6 We describe a patient whose echocardiogram revealed coarse diastolic fluttering of mitral valve leaflets in the absence of the above causes.

CASE REPORT

The patient was a 23-year-old white man with Down's syndrome who was referred to us for evaluation of a heart murmur which had been present since birth. Physical examination revealed a well nourished, acyanotic white man (height 5'4", and weight 110 lb) with typical Down's facies and a short and slightly webbed appearing neck. The carotid arteries had good uptake (no bruits), extremities revealed slightly bounding peripheral pulses, and there was no jugular venous distension at 45°. The heart showed no visible precordial pulsations and had no palpable thrill or heave. PMI was palpable in the 5th intercostal space 1 cm lateral to the midclavicular line. S1 was normal and S2 was slightly increased (no split was auscultated). A grade 3/6 continuous murmur, which peaked in late systole and waned in late diastole, was heard maximally at the 2nd left intercostal space, but was also heard over the entire precordium and the interscapular area. A normal mean QRS axis and left ventricular hypertrophy were present on the electrocardiogram and the chest x-ray film showed cardiomegaly (mild to moderate), left atrial enlargement and prominent left pulmonary artery. A simultaneously recorded phonocardiogram from the 2nd left intercostal space demonstrated a continuous murmur, consistent with the diagnosis of patent ductus arteriosus.

An echocardiogram was obtained which showed coarse fluttering of the anterior and posterior mitral valve leaflets during diastole; the aortic root, left atrium and pulmonic valve were unremarkable (Fig 1).

DISCUSSION

The diastolic flutter waves on the mitral valve leaflets noted on echocardiogram in our patient are more coarse than those normally seen in aortic insufficiency.1,6 This coarse flutter pattern is usually noted in atrial fibrillation or flutter, but both were absent on the electrocardiogram which showed normal sinus rhythm. It is unusual to see mitral valve flutter in mitral insufficiency, although cases of pure massive mitral insufficiency proved on catheterization show mitral valves moving abnormally during diastole with the anterior leaflet moving chaotically without fine vibrations usually seen in aortic regurgitation.6 Systolic and diastolic fluttering of the mitral leaflets has been reported in flail mitral valve secondary to ruptured chordae tendineae.7 The coarse fluttering of mitral valve leaflets in the absence of atrial fibrillation and flutter in this patient could be related to the increase in blood flow across the mitral valve present in patent ductus arteriosus.

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*From the Charles R. Drew Medical School, Martin Luther King, Jr. Hospital Division of Cardiology, Los Angeles, and the University of California Irvine Medical Center.

**Fellow in Cardiology.

†Chief, Cardiology Division, and Associate Professor of Medicine (Cardiology).

Reprint requests: Dr. Prakash, Charles Drew Postgraduate Medical School, Los Angeles 90047

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Figure 1. The anterior and posterior leaflets of the mitral valve show coarse fluttering during diastole. Abbreviations: ECG = electrocardiogram; PCG = phonocardiogram with a continuous murmur; CW = chest wall; IVS = interventricular septum; PW = left ventricular posterior wall; MV = mitral valve leaflets.
Echocardiographic Changes in Pheochromocytoma*

Luis Cueto, M.D., F.C.C.P.; Jaime Arriaga, M.D.; Juan Zinser, M.D.

M-mode echocardiography proved to be a useful method in the diagnosis of cardiac changes produced by pheochromocytoma. Findings recorded during a hypertensive crisis included systolic anterior movement of the anterior mitral leaflet, paradoxical septal motion, and prominent excursion of the posterior wall. After surgery, early regression of the chronic effects of hypertension was observed.

Echocardiography has not been used in cases of pheochromocytoma, a disease known to produce myocardial changes through the chronic and acute oversecretion of catecholamines.1-3

This report describes a patient with pheochromocytoma, in whom serial echocardiograms were recorded during various stages of the disease.

CASE REPORT

A 48-year-old woman was admitted to the emergency room on Dec 28, 1978, because of uncontrolled blood pressure. She had, in the last six years, several episodes of “diaphoretic attacks.” At the time of admission, her blood pressure was 230/120 mm Hg, heart rate, 120 beats per minute, and she was sweating profusely. A chest x-ray film showed no abnormalities, and the ECG disclosed sinus tachycardia with prominent ST-T depression, left ventricular hypertrophy (LVH) signs, and a U wave. There were also several premature ventricular contractions. An echocardiogram was performed during the crisis, showing systolic anterior movement of the anterior mitral leaflet (SAM), para-

*From the Department of Cardiology, Instituto Nacional de la Nutricion, Mexico City, Mexico
Reprint requests: Dr. Cueto, 295 Prado Sur, Mexico 10 DF, Mexico

FIGURE 1. Echocardiogram during pheochromocytoma crisis showing a typical paradoxical septal motion with prominent posterior wall excursion. Arrows point to the SAM; EF slope is 17 mm/second.

doxic septal movement, increased thickness of the posterior wall and septum, and an almost flat E-F slope (Fig 1). The LV mass was 173 gm. The intravenous pyelograms, aortography, and catecholamine determinations were compatible with a left pheochromocytoma.

On Jan 11, 1978, the patient underwent surgery. A large left adrenal tumor was then removed. Twenty-four hours before surgery, while she was quiet and normotensive, a new echocardiogram was performed showing no SAM and a slight paradox movement of the septum (Fig 2). One month after an uneventful recovery, the echocardiogram was repeated (Fig 3). At that time, the septum had a normal systolic posterior movement, and the posterior wall and the septum were thinner than preoperatively. The EF slope was then 71 mm/second, and LV mass 106 gm.

DISCUSSION

Electrocardiographic records in cases of pheochromocytoma have shown that there are some changes determined by the acute increase in catecholamine plasma levels,4 and some others, which result from the chronic catecholamine oversecretion.3

The pathologic studies have confirmed these findings, and it is accepted that, in addition to LVH, there are myocarditis-type changes.1

In our case, the increased thickness of the septum, posterior LV wall, and the abnormal EF slope, are probably the result of the chronic left ventricular overload, while the paradoxic septal motion and the SAM were secondary, at least in part, to the paroxysmal

REFERENCES

2 Gabor GE, Winsberg F: Motion of mitral valve in cardiac arrhythmias. Investigative Rad 5:355, 1970