Intracavity gradients during stress echocardiography

Figure 1. Stress echocardiogram and continuous wave Doppler profile at peak exercise

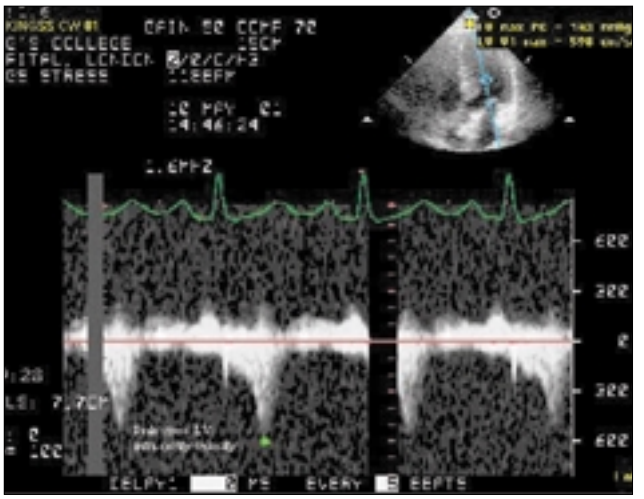
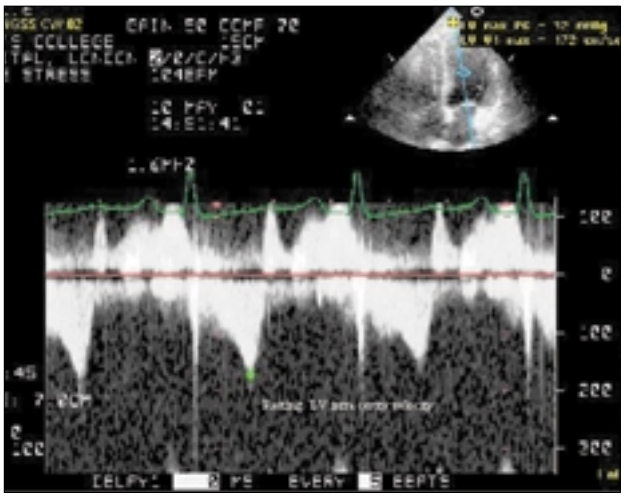


Figure 2. Stress echocardiogram at rest



These images are from a 65-year-old woman referred for stress echocardiography following a history of exercise-induced dizziness and shortness of breath.

A dobutamine stress echocardiogram was performed. The resting heart rate was 90 beats per minute and resting blood pressure was 210/90 mmHg. The resting images showed severe concentric left ventricular hypertrophy with normal systolic function.

The test was terminated at 10 minutes due to reproduction of the patient's symptoms (dizziness and shortness of breath) and further elevation of the blood pressure. At 20 mcg/kg/min of dobutamine, left ventricular (LV) cavity obliteration occurred along with an intra-ventricular velocity of 6 m/s corresponding to an intra-cavity gradient of 143 mmHg (figure 1). This figure also demonstrates the classic velocity profile of a dynamic intra-cavity gradient with a late peaking, high velocity curve. During rest, the intra-cavity velocity returned back to normal, corresponding with a resolution of the patient's symptoms (figure 2).

Whilst it is not possible to comment on the presence of reversible ischaemia with this stress echo, it demonstrates other anatomical (LV wall thickness and cavity size) and physiological (intra-cavity gradient) parameters that can be assessed during stress echocardiography that may account for the patient's symptoms.

It also demonstrates the significant differences in cardiovascular physiology between the resting state and at peak exercise, thus highlighting one of the advantages of echocardiography during stress testing.

David Platts
Echo Fellow, Cardiology Department

Mark Monaghan
Consultant Clinical Scientist and Clinical Director, Cardiology and Cardiac Surgery

King's College Hospital, Denmark Hill, London, SE5 9RS.

Correspondence to: Dr D Platts (email: dgplatts@hotmail.com)

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