

STRESS ECHO V'S STRESS TESTING



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The standard exercise stress test (EST) has been used for a long time, providing a safe and well validated way to assess for inducible ischaemia, functional capacity and to provide prognostic information. More recently other modes of functional stress testing have become increasingly utilised namely exercise stress echocardiography (ESE), dobutamine stress echocardiography (DSE) and myocardial perfusion

studies (MPS).

Of these, exercise stress echocardiography and dobutamine stress echocardiography are the most widely used due to a number of important advantages.

1. Higher sensitivity than standard EST – 84% vs 68% ^{1,2}
2. Higher specificity than standard EST – 87% vs 77% ^{1,2}
3. Similar sensitivity and slightly better specificity compared with MPS with the added advantage of less overall cost, less time required from patient for testing and no radiation exposure.
4. ESE & DSE are cost effective as a first line test due to a reduction in unnecessary further investigations and procedures ³
5. Test of choice for women due to the high rate of false positive ECG changes on standard EST
6. Test of choice in those with resting ECG abnormalities that limit interpretation such as LBBB or abnormal ST segments at rest eg. LVH
7. Test of choice for the assessment of shortness of breath as can assess for multiple causes of symptoms, not just ischaemia (LV systolic function, valvular heart disease, diastolic function, pulmonary hypertension)

8. DSE is the test of choice in those who cannot perform exercise (eg. awaiting knee replacement, profoundly SOB etc). DSE has similar sensitivity and specificity to ESE. DSE also has some other specific uses such as looking at myocardial viability or assessing the severity of AS in patients with reduced systolic function.

Recommendations:

ESE is significantly more accurate than a standard EST, is particularly helpful in those with resting ECG abnormalities, women, and in the assessment of shortness of breath. ESE allows for screening of other important clinical problems related to LV function, diastolic function and valvular heart disease. What is more, it has been demonstrated to be cost effective compared to EST when used as a first line test. For these reasons it is the preferred option for initial stress testing. For those unable to exercise then a DSE is the test of choice. For the small group of patients whose echo images are not adequate for testing, the test can be performed using an echo contrast agent which can enhance endocardial definition and allow diagnostic imaging in the majority of patients. In the very small number of patients who do not have adequate image quality despite the administration of an echo contrast agent, myocardial perfusion study would be used.

Footnotes:

1. *Fleischmann et al, JAMA 1998 280:913*
2. *Roger et al, J Am Coll Cardiol 24:109:114*
3. *Marwick et al, Eur Heart J 2003; 24:1155, 1163*

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