**STRESS ECHOCARDIOGRAPHY: DIAGNOSIS, PROGNOSIS AND RECENT ADVANCES**

**A. Elhendy**

Marshfield, WI, USA

Stress echocardiography is a well-established tool for the diagnosis and risk stratification of coronary artery disease. The advantages of the technique include safety, wide availability, mobility and the lack of ionizing irradiation. The technique provides accurate quantitative assessment of myocardial function and ischemia. Furthermore, other significant cardiac abnormalities such as effusion, aneurysm, masses and valvular dysfunction can be readily detected. Limitations of the technique include poor imaging quality particularly in obese patients and those with emphysema, the relatively low sensitivity in moderate coronary stenosis and the incidence of false positive tests with hypertensive response. The introduction of myocardial contrast agents has significantly improved imaging quality and overall feasibility of the test. In addition, evaluation of myocardial perfusion using contrast agents improves sensitivity for the diagnosis of coronary artery disease. The achievement of the target heart rate is important to lower the possibility of a false negative study with exercise or dobutamine stress. Careful selection of the patient and type of stress test (exercise versus pharmacologic) is essential. In addition, holding beta blockers should be attempted when feasible to improve heart rate response. In selected patients, feasibility and accuracy may be enhanced by using protocols such as pacing, accelerated dobutamine infusion with early atropine administration, diastolic function evaluation, tissue Doppler and strain rate imaging and administration of beta blocker during recovery. The technique has also a role in the assessment of patients with known coronary artery disease by evaluation of physiologic significance of anatomical lesions and evaluation of adequacy of medical and or interventional therapy. The test can guide physicians regarding the need for revascularization after consideration of other clinical data. Patients with extensive abnormalities are at increased risk of death and myocardial infarction. In these patients, coronary angiography and revascularization should be considered. Patients with a normal study have a very low incidence of cardiac events and can be exempted from further cardiac testing as long as they remain clinical stable. An individual approach should be considered in patients with mild to moderate abnormalities. Further studies are still needed to evaluate the cost effectiveness of stress echocardiography, relative to other testing modality and to evaluate the potentials of implementing the technique to improve outcome in patients with known or suspected coronary artery disease.