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64 DIAGNOSTIC ACCURACY OF EXERCISE STRESS TESTING IN INDIVIDUALS WITHOUT KNOWN CORONARY ARTERY DISEASE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background Exercise stress testing offers a non-invasive, less expensive way of risk stratification prior to coronary angiography, and a negative stress test may actually avoid angiography. However, previous meta-analyses have not included all exercise test modalities, or patients without known coronary artery disease.

Objectives To systematically review the literature to determine the diagnostic accuracy of exercise stress testing for coronary artery disease on angiography.

Search methods MEDLINE (January 1966–November 2009) and EMBASE (1980–2009) databases were searched for articles on diagnostic accuracy of exercise stress testing.

Selection criteria We included prospective studies comparing exercise stress testing with a reference standard of coronary angiography in patients without known coronary artery disease. Results From 6055 records, we included 54 studies with 3352 participants. Overall, we found published studies regarding five different exercise testing modalities: treadmill ECG, treadmill echo, bicycle ECG, bicycle echo and myocardial perfusion imaging. The prevalence of CAD ranged from 12% to 35%. Positive and negative likelihood ratios of stress testing increased in low prevalence settings. Treadmill echo testing (LR+ 3.57) performed better than treadmill ECG (LR+ 3.57) for ruling in CAD and ruling out CAD (echo LR− =0.19 vs ECG LR− =0.38). Bicycle echo testing (LR+ =11.34) performed better than treadmill echo testing (LR+ =7.94), which outperformed both treadmill ECG and bicycle ECG. A positive exercise test is more helpful in younger patients (LR+ =4.74) than in older patients (LR+ =2.8).

Conclusions The diagnostic accuracy of exercise testing varies, depending upon the age, sex and clinical characteristics of the patient, prevalence of CAD, and modality of test used. Exercise testing, whether by echocardiography or ECG, is more useful at excluding CAD than confirming it. Clinicians have concentrated on individualising the treatment of CAD, but there is great scope for individualising the diagnosis of CAD using exercise testing.