October 2001 (Vol. 50, No. 10)

What is the value of screening for heart disease with an exercise stress test (EST) in an asymptomatic person?

Mark A. Zamorski, MD, MHSA
University of Michigan

EVIDENCE-BASED ANSWER

There is insufficient evidence to recommend for or against an EST for screening asymptomatic individuals of any age. (Grade of Recommendation: C, based on case series.)

EVIDENCE SUMMARY

Several case series have demonstrated that occult coronary heart disease (CHD) can be identified by screening asymptomatic adults with an EST, some of whom will ultimately experience CHD death. The best estimates of sensitivity and specificity of the EST for identifying occult CHD are 45% and 85%, respectively.[1] The sensitivity for detection of risk for cardiac death is lower; sensitivities between 27%2 and 61%[3] have been reported. In a population with a low risk of CHD death, the positive predictive value (percent with a positive test who actually have CHD) will be low.

Patients and clinicians might be more likely to address risk factors for cardiovascular disease in patients with silent ischemia. However, it has never been shown that early intervention of known ischemia during its asymptomatic phase improves CHD outcome.

Limiting screening to those at high risk for CHD would improve the predictive value of a positive test. One study[5] of middle-aged asymptomatic men and recorded the presence of a first-degree relative with heart disease, systolic blood pressure of 140 mm Hg or greater, smoking, or total cholesterol higher than 250 mg per dL. Men with any of these risk factors had significantly higher CHD event incidence if they had 2 or more EST abnormalities than those with less than 2 EST abnormalities. The authors concluded that routine screening of asymptomatic men without these risk factors was not warranted, but the uncertain efficacy of earlier intervention remains.

Screening individuals in occupations that can affect public safety, such as airline pilots, would identify some individuals at risk for sudden cardiac death, though the population impact of this would be miniscule. Screening individuals who will be engaging in strenuous physical activity would also be effective at detecting at least some people who are at risk of sudden death. However, only 2% of cardiac deaths occur during exercise,[2] and it again is not clear that early intervention improves outcome.

RECOMMENDATIONS FROM OTHERS

The United States Preventive Services Task Force found insufficient evidence to recommend for or against the use of screening EST in middle-aged individuals.[2] The American Heart Association and the American College of Cardiology advise against routine screening of asymptomatic men or women but suggested that there might be value in screening individuals who plan to start a vigorous exercise program, who are involved in occupations in which impairment might have an impact on public safety, or who are at high risk for CHD due to other diseases.[6] The American College of Sports Medicine, in a joint opinion with the American Heart Association, recommends a screening EST for men older than of 45 years who are about to embark on a vigorous exercise program.[7]

CLINICAL COMMENTARY

Karl B. Fields, MD

Moses Cone Health System Greensboro,North Carolina

The studies that came to a mixed conclusion looked at the test strictly as a diagnostic tool to detect ischemic coronary artery disease. Widespread use of the test persists for other reasons; studies have associated excellent prognosis with negative test results and higher mortality risk with lower fitness levels. Information such as this leads me to use the test for patients wishing to pursue vigorous exercise or for those with cardiac risk factors, regardless of symptoms.

R E F E R E N C E S

1. Froelicher VF, Lehmann KG, Thomas R , et al. Ann Intern Med 1998;128:965–74.
2. US Preventive Services Task Force. Guide to clinical preventive services:report of the US Preventive Services Task Force. 2nd ed. Baltimore, Md:Williams and Wilkins; 1996:3-14.
3. Gibbons LW, Mitchell TL, Wei M, Blair SN, Cooper KH. Am J Cardiol 2000;86:53–58.
4. Bruce RA, Hossack KF, DeRouen TA, Hofer V. J Am Coll Cardiol 1983;2:565–73.
5. Gibbons RJ, Balady GJ, Beasley JW , et al. Circulation 1997;96:345–54.
6. Balady GJ, Chaitman B, Driscoll D , et al. Circulation 1998;97:2283–93.