Noninvasive Testing in Women With Suspected Ischemic Heart Disease: Ten Highlights to Guide Quality Clinical Care

Jennifer H. Mieres, Hofstra North Short–LIJ School of Medicine
Leslee J Shaw, Emory University
Nanette K Wenger, Emory University

Journal Title: Clinical Cardiology
Volume: Volume 37, Number 9
Publisher: Wiley Open Access: Various Creative Commons Licenses | 2014-09-01, Pages 515-516
Type of Work: Article | Final Publisher PDF
Publisher DOI: 10.1002/clc.22323
Permanent URL: https://pid.emory.edu/ark:/25593/v3b17

Final published version: http://dx.doi.org/10.1002/clc.22323

Copyright information:
© 2014 Wiley Periodicals, Inc.
Accessed September 27, 2023 1:19 AM EDT
Noninvasive Testing in Women With Suspected Ischemic Heart Disease: Ten Highlights to Guide Quality Clinical Care

Jennifer H. Mieres, MD; Leslee J. Shaw, PhD; Nanette K. Wenger, MD
Department of Cardiology, Hofstra North Short–LIJ School of Medicine (Mieres), Hempstead, New York; Department of Medicine, Division of Cardiology, Emory University School of Medicine (Shaw, Wenger), Atlanta, Georgia

Ischemic heart disease (IHD) has been historically under-recognized and undertreated in women, with resultant adverse outcomes. The 2014 Consensus Statement from the American Heart Association, which focused on the role of noninvasive testing for women with suspected IHD, provides gender-specific evidence-based guidance to the clinician in the use of diagnostic procedures.1 Ten guideposts are presented below, emphasizing determination of risk status and management strategies for symptomatic women.

1. Ischemic heart disease in women is a consequent both to obstructive atherosclerotic plaque in the coronary arteries and to nonobstructive coronary artery disease and coronary microvascular disease; the latter are more common in women than in men. Symptomatic women with nonobstructive coronary disease and ischemia at noninvasive testing are at increased risk of a coronary event.

2. Women with IHD have a more diverse symptom presentation than do men, with pain not only in the chest but in the arms, jaw, neck, and interscapular area; associated epigastric discomfort and nausea; and often nonpain symptoms such as excessive dyspnea and fatigue. Women’s ischemic symptoms may often relate to emotional or mental stress and are less frequently precipitated by physical activity compared to ischemic symptoms in men.

3. Determination of a woman’s risk status (low, intermediate, or high risk for ischemic heart disease) should guide the discussion and shared decision-making between the woman and her healthcare provider as to the need for and appropriate selection of diagnostic tests. Low-risk women generally require no further testing and should be assessed for a non-stable ischemic heart disease etiology of their symptoms.

4. Pretest risk characteristics include age (premenopausal nondiabetic women are generally at low risk) and functional capacity (limited functional ability confers higher risk). Multiple conventional cardiac risk factors confer intermediate to high risk. Markers of high-risk status include peripheral arterial disease, greater than 10-year duration or poorly controlled diabetes mellitus, chronic obstructive lung disease, transient ischemic attack or cerebrovascular accident, chronic kidney disease, inability to perform activities of daily living, or a <5 metabolic equivalents (METs) estimated Duke Activity Status exercise capacity.

5. Testing provides an estimate of ischemic burden and guides post-test anti-ischemic management recommendations. The recommended initial diagnostic test for an intermediate-risk woman is an exercise electrocardiogram (ECG) in women functionally capable of exercising and with an interpretable resting ECG.

6. Women at intermediate to high risk, who have an abnormal 12-lead resting ECG or who are unable to exercise adequately, are candidates for stress imaging (myocardial perfusion imaging [MPI], echocardiography, or cardiac magnetic resonance [CMR] imaging or coronary computed tomographic angiography [CCTA]). Test selection may preferentially involve limiting exposure to ionizing radiation.

7. Exercise test interpretation includes exercise capacity (cardiorespiratory fitness), chronotropic response, heart rate recovery response, and blood pressure response to exercise, in addition to ST-segment response. An indeterminate exercise tolerance test (ETT) in a woman at intermediate IHD risk warrants consideration of additional diagnostic testing with stress imaging. High-risk ETT markers include an exercise capacity <5 METs, heart rate recovery <12 bpm after 1 minute, ST depression >2 mm, ST depression >1 mm at <5 METs or >5 minutes recovery, ST elevation ≥2 mm, high-risk Duke Treadmill Score ≥11 or less, and systolic blood pressure decrease >10 mm Hg from rest.

8. Post-stress test risk stratification is based on the extent and severity of inducible ischemia. High-risk markers of stress echocardiography include a resting left ventricular ejection fraction (LVEF) ≤40%, extensive resting wall motion abnormalities or extensive ischemia, right ventricular ischemia, increase in end-systolic size with stress, and LVEF decrease with stress. Stress MPI high-risk markers include a summed stress score ≥8, ≥10% of abnormal myocardium at stress, ≥10% of ischemic myocardium, left ventricular dilation, and peak stress or post-stress LVEF ≤45%. High-risk characteristics of stress CMR include a rest or stress LVEF ≤40%, ≥3 abnormal or ischemic CMR MPI segments, or ≥3 abnormal
or ischemic CMR wall motion segments. With CCTA, high-risk indicators include coronary artery calcium \( \geq 400 \), proximal left anterior descending artery stenosis \( \geq 70\% \), 2- or 3-vessel coronary artery disease (CAD), left main stenosis \( \geq 50\% \), and 3-vessel nonobstructive CAD.

9. Newer data support CMR and CCTA as accurate for detection of obstructive CAD and coronary heart disease risk in symptomatic women, with CCTA providing information on both obstructive and nonobstructive CAD burden.

10. Per the Stable Ischemic Heart Disease clinical practice guidelines, abnormal but non–high-risk test results should invoke consideration of symptom-guided selective reimaging. High-risk test results should invoke consideration of guided by symptoms coronary angiography.

Reference