Appropriateness Criteria Tackle Stress Echo Tests

BY KERRI WACHTER
Senior Writer

The American College of Cardiology Foundation and key specialty societies have released new appropriateness criteria for the use of stress echocardiography in an ongoing effort to help physicians keep abreast of rapidly changing imaging technology.

The indications in the "2008 Appropriateness Criteria for Stress Echocardiography" are intended to identify common scenarios encompassing most of current practice and are part of a systematic evaluation of the utility of diagnostic imaging tests in common clinical situations (Circulation 2008 March 3 [doi:10.1161/circulationaha.107.189097]).

In all, 51 indications were considered. Of these, stress echocardiography was found to be appropriate for 22, uncertain for 10, and inappropriate for 19. The use of stress echocardiography for the detection of coronary artery disease (CAD) in symptomatic patients was generally deemed to be appropriate. Routine repeat testing, general screening, and postrevascularization risk assessment were generally viewed less favorably.

All indications were assumed to apply only to adult patients (18 years or older). It was also assumed that the test is performed and interpreted by qualified individuals in facilities that are proficient in the imaging technique.

Panelists were also instructed to make several assumptions specifically for stress echocardiography.

► All standard echocardiographic techniques for image acquisition are available for each indication; and stress echocardiography has a sensitivity and specificity similar to those in the published literature.

► The mode of stress testing is assumed to be exercise, unless the patient is unable to do so. For those patients who cannot exercise, it is assumed that dobutamine is used.

► Preoperative evaluation includes procedures such as organ transplantation. Panelists also were asked not to consider other imaging modalities or other appropriateness criteria while rating indications.

An imaging study was considered appropriate if the expected incremental information, combined with clinical judgment, "exceeded the expected negative consequences by a sufficiently wide margin for a specific indication that the procedure is generally considered acceptable care and a reasonable approach for the indication," the panel wrote. "Inappropriate use may be costly and may prompt potentially harmful and costly downstream testing and treatment such as unwarranted coronary revascularization or unnecessary repeat follow-up."

Appropriateness was indicated by a score from 7 to 9. The test is generally acceptable and is a reasonable approach for the specific indication. Inappropriateness was indicated by a score of 1-3. The test is generally not acceptable and is not a reasonable approach for the indication. Tests scoring from 4 to 6 were considered uncertain for specific indications. The test may be generally acceptable and may be a reasonable approach for the indication; more research and/or patient information is needed to classify the indication definitively.

"Although the appropriateness ratings reflect a general expert consensus of when stress echocardiography may or may not be useful for specific patient populations, physicians and other stakeholders should understand the role of clinical judgment in determining whether to order a test for an individual patient." For example, an inappropriate rating does not rule out the use of stress echocardiography when there are patient- and condition-specific data to support that decision. ■

Larger Left Atrial Size May Increase Stroke Risk in Blacks

BY PATRICE WENDLING
Chicago Bureau

Echocardiographically measured left atrial size was significantly related to ischemic stroke and all-cause mortality in a follow-up analysis of 1,886 blacks in the Atherosclerosis Risk in Communities study.

At a median of 9 years follow-up, there were 103 strokes (6.47/1,000 person-years) and 206 deaths (13.3/1,000 person-years) in participants in the Jackson, Miss., cohort of the study. Their mean age was 59 years; 65% were women.

Left atrial size was significantly related to hypertension, diabetes, and body mass index, Dr. Harsha S. Nagarajarao reported at the American Federation for Medical Research Southern Regional meeting in New Orleans.

In an effort to adjust left atrial (LA) size to body size, LA size was indexed to height and was then divided into quintiles, with 377 patients in the top quintile of LA size (2.57-3.55 cm/m) and 1,509 patients in the bottom four quintiles (1.29-2.56 cm/m). Significantly more patients in the top quintile of LA size were hypertensive (74.3% vs. 57%), diabetic (29% vs. 21.3%), and had a higher mean BMI, compared with those with lower LA size (34.6 vs. 29.4 kg/m^2).

In a multivariate analysis, LA size on echocardiogram was significantly associated with ischemic stroke (hazard ratio 1.58) and all-cause mortality (HR 1.47), even after adjustment for age, sex, cigarette smoking, diabetes, hypertension, BMI, ratio of total cholesterol to HDL cholesterol, and triglyceride levels.

Left atrial size remained significantly related to all-cause mortality (HR 1.40) after further adjustment for left ventricular hypertrophy, Dr. Nagarajarao of the University of Mississippi Medical Center, in Jackson, and colleagues reported.

Non-Hispanic whites also have an increased incidence of stroke with increased LA size, but LA size is more important in blacks because of that population's increased stroke risk, Dr. Nagarajarao said in an interview. Blacks have a twofold higher incidence of stroke when compared with non-Hispanic whites, he added.

"Echocardiography may be a potentially useful noninvasive tool in identifying additional risk factors for stroke, and identifying participants with larger LA size may allow us to take preventive measures in identifying risk factors and treating them," he said.

Last year, investigators at the University of Mississippi Medical Center also reported that echocardiographically derived left ventricular mass index (LVMI) was an independent predictor of incident ischemic stroke among 1,792 blacks in the Jackson cohort, after adjustment for similar cardiovascular risk factors (Stroke 2007;38:2686-91). In addition, the relation between LVMI and stroke remained significant after adding LA size and mitral annular calcification to the multivariable analysis.

Clinicians at the center determine LA size routinely on echocardiography in all patients at risk of stroke, Dr. Nagarajarao said. When asked which measurement is preferred, he said both LVMI and LA size have the potential to be independent predictors of risk factors, adding that it is important to recognize that each is independent of the other.

Previous studies have shown that the BP medication hydrochlorothiazide has reduced LA size when used along with controlling hypertension, although further study is needed to determine whether this has any effect on reducing stroke incidence, he said. ■

Using CAC Imaging to Track Tx Response and Rule Out Risk

BY BRUCE JANCIN
Denver Bureau

SNOWMASS, COLO. — The most intriguing potential application for coronary artery calcium imaging is as a tool to track atherosclerosis progression over time in response to treatment, Dr. Matthew J. Budoff said at a conference sponsored by the Society for Cardiovascular Angiography and Interventions.

"I'm not suggesting that this is a current application, but the data now emerging are pretty interesting," according to Dr. Budoff, director of cardiac CT at Harbor-UCLA Medical Center, Torrance, Calif.

He cited an observational study in which investigators tracked the change in coronary artery calcium (CAC) on serial electron-beam CT scans in 495 statin-treated asymptomatic patients. Forty-one subjects had an acute MI during up to 7 years of follow-up. The relative risk of an MI was increased 17-fold in those with at least a 15% per year rise in CAC score (Arterioscler. Thromb. Vasc. Biol.2004;24:1272-7).

"This might be a way, in the future, of monitoring therapy. You're on a statin, your LDL is pretty good, but your CAC is increasing—maybe we should do something more," Dr. Budoff said at the conference cosponsored by the ACC.

He also described several current uses for CAC imaging:

► **Screening asymptomatic patients with an intermediate Framingham risk score.** Forty percent of asymptomatic adults fall into the Framingham intermediate-risk category, meaning they have an estimated 10%-20% risk of a coronary event within the next 10 years. Most acute MIs occur in this mid-risk group. Dr. Budoff was coauthor of a 2007 ACC/AHA Clinical Expert Consensus Statement that endorsed CAC measurement as a means of further stratifying Framingham intermediate-risk patients in order to identify a higher-risk subgroup in whom aggressive primary preventive measures are warranted (J. Am. Coll. Cardiol. 2007;49:378-402).

The Multi-Ethnic Study of Atherosclerosis (MESA), a National Institutes of Health–sponsored prospective study of 6,814 patients followed for 3.5 years now in press, was merely the most recent of several large studies showing that a CAC score of 100 or more was associated with a 10-fold increased risk of incident coronary heart disease.

And a prospective study sponsored by the NIH of more than 10,700 asymptomatic persons free of known coronary heart disease when they underwent CAC measurement showed that a baseline CAC of 97-409 was linked with an adjusted 9.7-fold greater risk of nonfatal MI or CHD death in the next 3.5 years, compared with subjects with a CAC of 0 (Am. J. Epidemiol. 2005;162:421-9).

"A CAC greater than 100 is more robust as a predictor of future events than Framingham risk factors … and more robust than C-reactive protein or carotid intimal-medial thickness," observed Dr. Budoff, who is on the speakers bureau for General Electric.

► **Identification of very-low-risk patients needing no further evaluation for coronary artery disease.** Four studies totalling nearly 6,000 patients indicate a CAC of 0 has a 95%-99% negative predictive value for obstructive coronary disease. A fifth study, by Dr. Budoff and coinvestigators, concluded that a CAC score of 0 on an initial scan has at least a 5-year warranty before a repeat scan is appropriate because the likelihood of CAC progression during that first half-decade is so low (Int. J. Cardiol. 2007;117:227-31).

► **A tool to improve compliance.** In a study by Dr. Budoff's group, showing patients their CAC image was tied with 91% adherence to statin therapy over 3 years among those who scored in the top CAC quartile (Atherosclerosis 2006;185:394-9). ■

Pages 28a—28b