

Coronary Calcium Imaging Has Multiple Uses

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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.

“Clearly we need more data here. 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 by Dr. Paolo Raggi of Tulane University, New Orleans, and coinvestigators, who measured the change in coronary artery calcium (CAC) on serial electron-beam tomography 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. CAC progression provided incremental prognostic value beyond that associated with LDL-cholesterol level, which was a mean of 118 mg/dL in patients who had an MI and a similar 122 mg/dL in those with no MI (*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 commented at the conference cosponsored by the American College of Cardiology.

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. The majority of acute MIs occur in this mid-risk group. Dr. Budoff was coauthor of a 2007 ACC/American Heart Association 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 at the *New England Journal of Medicine*, 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.

Prior to MESA, Dr. Budoff conducted an observational registry study of 25,253 consecutive asymptomatic patients referred by their primary care physicians for CAC scanning. After adjustment for traditional cardiovascular risk factors, a baseline CAC of 100 or greater was associated with a 10.4-fold increased rate of all-cause mortality over the next 10 years, compared with a CAC of 0 (*J. Am. Coll. Cardiol.* 2007;49:1860-70).

► **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). However, the 2007 ACC/AHA consensus statement concluded more evidence is needed before a CAC score of 0 can be recommended as a rule-out for obstructive coronary disease.

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

“That’s remarkable when you consider that the national average is in the 40% range. A single picture may be worth a thousand words for some of these patients,” observed Dr. Budoff, who is on the speakers bureau for General Electric. ■



Millions of patients with mixed dyslipidemia are at risk for cardiovascular (CV) disease^{1,2}

Expand your focus beyond LDL-C to include HDL-C and triglycerides



Think and manage comprehensively

Lowering LDL-C can decrease CV risk by 30% to 40%, but many patients continue to be at risk for development or progression of CV disease.^{2,3} This remaining risk or, “residual risk,” involves many nonlipid and lipid risk factors.* **Low HDL-C and high triglycerides (TGs)** are also important risk factors for CV disease.²

Address LDL-C, plus HDL-C and TGs[†]

Only 20% of patients with lipid levels not at their targets have an isolated LDL-C elevation; the remaining 80% have HDL-C and/or TG abnormalities beyond LDL-C.¹ There is an urgent need to think comprehensively and address the entire lipid profile. The end goal? Help achieve recommended lipid targets to reduce cardiovascular risk.

*This remaining risk may be further reduced, but not completely eliminated.

†Elevated non-HDL-C (total C minus HDL-C) is a secondary lipid target for persons with high TGs. The non-HDL-C goal is 30 mg/dL higher than the LDL-C goal.²

References: 1. Data on file, Abbott Laboratories. 2. National Cholesterol Education Program. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report. National Heart, Lung, and Blood Institute. <http://www.nhlbi.nih.gov/guidelines/cholesterol/atp3full.pdf>. September 2002. Accessed September 18, 2007.

3. Grundy SM, Cleeman JI, Merz CNB, et al, for the Coordinating Committee of the National Cholesterol Education Program. Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III guidelines. *Circulation*. 2004;110:227-239.