Calcium Heart Score May Predict Low Risk of Coronary Events

By Gil Ross — October 6, 2015

Two new studies in the current Journal of the American College of Cardiology (JACC) lend some support to the use in appropriately-selected patients of the cardiac calcium test score to nudge treatment decisions regarding, especially, statin drugs when the indications for treatment prior to the test are equivocal.

One study [2], done by the MESA (Multi-Ethnic Study of Atherosclerosis) research group and led by Dr. Robyn L. McClelland of the University of Washington Biostatistics Dept., was undertaken to derive and validate a novel risk score to estimate 10-year coronary heart disease (CHD) risk using coronary artery calcium (CAC) scores, obtained via CT scan, when CAC is added to traditional risk factors.

The researchers' analysis was successful, in that the algorithm of adding CAC score to traditional risk factors enhanced the predictive power. As they put it, "[a]n accurate estimate of 10-year CHD risk can be obtained using traditional risk factors and CAC. The MESA risk score [3], which is available online on the MESA web site for easy use, can be used to aid clinicians when communicating risk to patients and when determining risk-based treatment strategies."

Having that proof under its belts, the MESA team went on to actually evaluate the specific CHD risk among their cohort, when CAC scores were included with the traditional risk factors. Since the American College of Cardiology (ACC)/American Heart Association (AHA) cholesterol management guidelines have significantly broadened the scope of candidates eligible for statin therapy, the multi-center research group wanted to evaluate the implications of the absence of coronary artery calcium (CAC) in reclassifying patients [4] from a risk stratum, in which statins are recommended to one in which they are not.

This study was led (for the MESA team) by Drs. Khurram Nassir of Baptist Health-South Florida, Miami, and Harlan Krumholz, Center for Outcomes Research, Yale-New Haven Hospital, CT.

Their cohort consisted of of 4,758 patients, aged 45-84, with no CHD history at the study's outset.
Slightly more than half were women, and all races were included. The mean duration of follow-up was 10.4 years. The findings: among patients who were candidates to receive statins without the CAC test, those who had very low or zero calcium detected ("zero" score), had a 10-year risk of CHD events less than half of the frequency predicted without the test, obviating their indication for statins.

"The absence of CAC reclassifies approximately one-half of candidates as not eligible for statin therapy." Digging a little deeper into those numbers, Dr. Nassir told MedPage Today [5] that "[w]e believe that the value of CAC testing in the current era may be in limiting the scope of statin therapy to more selective use, rather than in expanding it."

The authors believe their results do not encourage CAC screening among very high or very low risk patients, but instead CAC should be used for the many millions who fall in the middle-range of CHD risk and who are now being advised to take statins.

In Gina Kolata's New York Times' article [6] on this study, she writes "[f]or those who have no objections to taking statins, there is no need for a heart scan, Dr. Krumholz said. But for those who are reluctant to take them, he said, 'I am willing to use this to refine their risk estimate.' ... 'Maybe this is a tool to actually do less.'

Currently, many millions of Americans are being advised to take statins, although they are asymptomatic and have no history of any CHD. Referring to using CAC score for screening such people, again quoting Dr. Nassir to MedPage Today, "Why bother when two-thirds are already candidates for treatment?" he said.

In an accompanying editorial [7], entitled "Coronary Artery Calcium Scoring: Are We There Yet?" Donald Lloyd-Jones, MD, of Northwestern University in Chicago and a co-chair of the American College of Cardiology/American Heart Association cardiovascular risk guidelines, largely agreed with the authors that calcium scores are most useful for patients "in the broad middle," where "there is room for the patient-clinician discussion espoused by recent guidelines, which could well be informed by judicious use of CAC screening."