

CAC predictive of CHD events in minority groups

March 26, 2008 | Lisa Nainggolan

Irvine, CA - The coronary artery calcium (CAC) score is a predictor of coronary heart disease not just in whites but also in blacks, Hispanics, and Chinese, a new analysis of the **Multi-Ethnic Study of Atherosclerosis** (MESA) study shows [1]. **Dr Robert Detrano** (University of California, Irvine) and colleagues are the first to examine the relationship between the amount of coronary calcium and the incidence of coronary events in various ethnic groups; they report their findings in the March 27, 2008 issue of the *New England Journal of Medicine*.

Detrano explained to **heartwire** that although it is already known that the prevalence and extent of coronary calcification differ substantially among ethnic groups—for example, African Americans are known to have around 40% less calcification than whites—"what we didn't know was whether, when there is calcification, it was as meaningful. We have shown that it is."

His team found that a doubling of calcium scores increased the estimated probability of a major coronary event by around 25% in all the ethnic groups they looked at, over a follow-up period of almost four years—a measure they say adds "incremental" value to the prediction of coronary heart disease over and above standard risk factors.

"The results prove that coronary-calcium detection is a strong predictor of heart attack and disease for African Americans, Hispanics, and Chinese Americans as well [as whites]. It wasn't known before whether this would be effective for other racial and ethnic groups, and this study answers that important question," he said.

Risks similar among all ethnic groups

Detrano et al used the MESA data—a cohort of 6722 men and women with no clinical cardiovascular disease at entry, of whom 39% were white, 28% were black, 22% were Hispanic, and 12% were Chinese—and followed the participants for a median of 3.8 years. They collected data on risk factors and performed two scans for CAC, using the mean of two scans to calculate the calcium score.

Over the follow-up period, there were 162 coronary events, of which 89 were major (MI or death from CHD). Among the four major ethnic groups, a doubling of the calcium score increased the risk of a major coronary event by 15% to 35% and the risk of any coronary event by 18% to 39%. No major differences among racial and ethnic groups in the predictive values of calcium scores were detected.

Risk of coronary heart disease associated with a doubling of coronary artery calcium (CAC) score* in four racial or ethnic groups

Racial group	Major coronary event			Any coronary event		
	n	HR*	p	n	HR*	p
White	41	1.17	<0.005	74	1.22	<0.001
Chinese	6	1.25	0.11	14	1.36	<0.005
Black	18	1.35	<0.001	38	1.39	<0.001
Hispanic	24	1.15	<0.025	36	1.18	<0.001

*HRs were calculated after adjustment for risk factors and interactions between ethnic group and coronary calcium score and between ethnic group and diabetes (the only significant interaction). HRs are calculated on the basis of doubling of CAC+1.

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The researchers note, however, that ethnic-specific calibration of calcium measures may be needed to adjust for baseline differences among the ethnic groups and that the small number of clinical events in the study may be a limitation. "Further

follow-up of the MESA cohort will allow refinement of our risk estimates," they say.

CAC has same validity in these ethnic groups

Detrano told **heartwire** that these data could be used to reassure anyone who is already performing calcium screening that it can be used to safely predict risk in all of the ethnic groups studied. "This tells the physician that if you do this scan in any one of these ethnic groups, we feel it has the same validity."

And Detrano says it could be argued that calcification may be even more meaningful in these minority groups, simply because it is less prevalent. However, he stressed the predictive value of a certain calcium score is "about the same as in whites."

The results, he says, will help contribute to his clinical efforts in China, where he is involved in scientific studies to look at the value of coronary artery calcium screening. Before this study, it had not been established that coronary calcium detection could predict future heart disease and heart attacks in Chinese people, he noted.

Is the incremental value added by calcium scores worth it?

An accompanying editorial [2], by **Dr William S Weintraub** (Christiana Care Health System, Newark, DE) and **Dr George A Diamond** (Cedars-Sinai Medical Center, Los Angeles, CA), does not dispute the findings of Detrano et al but questions whether the "relatively small improvement in accuracy" afforded by including calcium scoring is "worth it," particularly taking into account the cost of such screening.

It would be worthwhile to recommend calcium screening in those with intermediate risk of heart disease.

Detrano told **heartwire** this discussion about the cost-effectiveness of calcium screening is nothing new. "You have to be cautious when you apply something. It's an enormous social expense to be screening everybody." However, he believes the imaging and screening industry needs to act to reduce prices. "Cost is one of the problems with this test. Of a scan that costs \$600, \$400 will be marketing costs. So whether or not you agree that this test is useful, it's beyond the means of many individuals and many societies.

"[Weintraub and Diamond's] concern is that people will pick this up and take it and say 'oh great, now we can go out and advertise this and tell people that we can help prevent them from getting heart attacks.' That's almost, but not quite, true," he adds.

But Detrano believes that, costs aside, in terms of the value that calcium screening adds, "it would be worthwhile to recommend calcium screening in those with intermediate risk of heart disease."

Detrano reports no conflicts of interest. Disclosures for the coauthors are listed in the paper. The editorialists report no conflicts of interest.



Sources

1. Detrano R, Guerci AD, Carr JJ, et al. Coronary calcium as a predictor of coronary events in four racial or ethnic groups. *N Engl J Med* 2008; 358:1336-1345.
2. Weintraub WS and Diamond GA. Predicting cardiovascular events with coronary calcium scoring. *N Engl J Med* 2008; 358:1394-1396.

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[HeartWire > News; Oct 05, 2006]

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