

Framingham and NCEP underestimate risk in women

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Baltimore, MD - By using the Framingham score or the **National Cholesterol Education Program Panel III** (NCEP III) guidelines as assessment tools in women, clinicians are missing about a third of those who are at risk of coronary heart disease, three new studies show. The researchers argue that coronary artery calcium (CAC) screening should also be used in selected people.

Dr. Erin D Michos (Johns Hopkins Medical Institutions, Baltimore, MD) is lead author of two of the papers, published in the December 2005 issue of the *American Heart Journal* [1] and the January 2006 issue of *Atherosclerosis* [2], respectively. Her colleague, **Dr. Khurram Nasir** (Johns Hopkins Medical Institutions), authored the other study, published in the November 15, 2005 issue of the *Journal of the American College of Cardiology* [3].

"Unlike the trend in men showing a decline in CHD death, there has actually been an increase in the incidence of cardiovascular mortality in women," Michos et al note.

In the first paper, Michos and colleagues studied 102 asymptomatic women who were the sisters of probands hospitalized with documented premature (<60 years) coronary heart disease. Of the women, 98% of were at low risk using the Framingham Risk Estimate (FRE), but when they underwent CT, 32% had detectable coronary artery calcium.

"The Framingham score does not incorporate a family history of heart disease, which is a limitation," Michos told *heartwire*. "So in women who have a history of premature CHD or possibly other high-risk conditions such as the metabolic syndrome, which are not fully accounted for in the current risk equation, Framingham may not be enough to adequately assess their risk."

"Women are low-balled by the Framingham prediction," says Michos.

Prevalence of high-risk CAC in low-risk women (FRE 5% or less)

CAC	FRE <5% (n=95), n (%)
>100 Agatston units	9 (9.5)
>75th percentile	28 (29)
>90th percentile	14 (15)

In the second study, the Hopkins team analyzed the Framingham scores of 2447 women aged 45 to 65 who were participating in a long-term study in Ohio. Based on FRE, 90% were classified as low-risk but detectable coronary artery calcium was present in 33%.

However, they acknowledge that, in practice, it is not feasible to screen all low-risk women, so they advocate using additional predictors to identify those most likely to have significant atherosclerosis. "It is vital to identify a subset of women within the low-risk group that have an increased likelihood of having a higher burden of coronary atherosclerosis."

In their study, approximately half (45%) of low-risk women with two or more CHD risk factors (obesity, smoking, or metabolic syndrome) and a family history of premature CAD had significant CAC (>75th percentile). It is this group, they say, who should be considered for a fast cardiac scan regardless of low Framingham scores.

"Low-risk women with multiple CHD risk factors, especially in the presence of a family history of premature CHD, are potential candidates for additional risk stratification by CAC screening. This strategy will allow us to identify potential candidates that may benefit from more aggressive preventive pharmacotherapy."

Michos says she would begin treatment such as aspirin, statins, and possibly antihypertensive medications in anyone whose coronary calcium is above the 75th percentile. "The CAC score predicts all-cause mortality," she notes.

"Our findings contribute to the growing body of evidence that suggests that traditional risk factors may fail to identify a sizable proportion of women with subclinical disease."

In the third study—for which Michos is the second author—the researchers investigated the classification of cardiovascular risk according to the NCEP III guidelines across a continuum of coronary calcium scores.

The study population of 1611 asymptomatic individuals were categorized as low risk (n=738), intermediate risk (n=583), moderately high risk (n=263), and high risk (n=27) according to NCEP and then underwent a single electron-beam computer-tomography scan.

Overall, 59% and 78% of participants with calcium scores of >400 Agatston units and 75th percentile or greater were not identified as high risk and candidates for pharmacotherapy on the basis of the NCEP guidelines. And women fared worse than men—83% of women didn't qualify for therapies compared with 67% of the men.

"We found that, at every level, women were far less likely than men to qualify for therapies such as aspirin," Michos says. "This is not surprising, given the above findings and the fact that a lot of the things in the NCEP guidelines are based on the Framingham score," she adds.

"The NCEP guidelines seem to underestimate cardiovascular risk in young asymptomatic individuals. . . . [A]ssessment of plaque burden might provide incremental value to global risk assessment," they conclude.

Sources

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