CBC Measures Help Assessment Of Coronary Artery Disease Risk

BY MITCHEL L. ZOLER
Philadelphia Bureau

ORLANDO — The various measures of a complete blood count together helped in the development of a risk score that was very effective for predicting a patient's subsequent risk of death or myocardial infarction.

"This relatively inexpensive and easily obtained test has important but unutilized risk information," Jeffrey L. Anderson, M.D., said at the annual meeting of the American College of Cardiology. "It adds substantially to a predictive model" based on standard risk factors, said Dr. Anderson, associate chief of cardiology at LDS Hospital in Salt Lake City. "Complete blood counts [CBCs] could provide risk stratification and add to treatment decision making at a negligible incremental cost."

The model was developed using the 19,044 patients who underwent coronary angiography at LDS Hospital during 1993-2003. During an average follow-up of 4 years, these patients had a total of 3,124 deaths and 4,672 nonfatal MIs, an overall event rate of 41%. "This was clearly a high-risk population," Dr. Anderson said. At baseline, 56% of patients had stable angina, 23% had unstable angina, and 21% had an acute MI. Angiography at baseline showed severe coronary stenosis (at least 70%) in 61% of patients, mild to moderate stenosis in 8%, and no stenosis in 31%.

'This relatively inexpensive and easily obtained test has important but unutilized risk information.'

DR. ANDERSON

Dr. Anderson and his associates developed a risk model that used seven measures from the CBC: hematocrit, red-cell distribution width, mean corpuscular-hemoglobin concentration, mean corpuscular volume, platelet count, white cell count, and white-cell differential count. The model also included age, gender, and seven classic coronary disease risk factors such as hyperlipidemia, hypertension, diabetes, and smoking. All of these factors were combined into a scoring formula that rated patient risk on a scale of 0-10. Other measures from the CBC, such as hemoglobin and mean corpuscular hemoglobin, were excluded from the final model because they added no additional risk stratification.

During follow-up, patients with a baseline score of 0 had a 12% incidence of death or nonfatal MI; patients with a baseline score of 10 had a subsequent 65% event rate. These extremes show a "substantial differential in risk" by combining the blood count parameters with standard risk factors, Dr. Anderson said. ■

Carotid Wall Thickness, Coronary Calcium Both Predictive in Elderly

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — Coronary artery calcification and common carotid wall thickness are similarly predictive of total cardiovascular disease events in elderly community-dwelling adults, Anne B. Newman, M.D., reported at a conference on cardiovascular disease epidemiology and prevention sponsored by the American Heart Association.

Cardiovascular event rates increased linearly with common carotid artery wall thickness.

DR. NEWMAN

Several noninvasive methods that document the extent of vascular disease have been shown to predict cardiovascular events, but these methods have not previously been directly compared in the same population, said Dr. Newman of the division of geriatric medicine at the University of Pittsburgh.

As part of the National Heart, Lung, and Blood Institute's Cardiovascular Health Study, 559 participants with a mean age of 80 years underwent both carotid ultrasound and coronary artery calcium (CAC) scans; 40% of the participants were male and 22% were black. At the time of the scans, clinical cardiovascular disease (CVD) was present in 33%.

A total of 112 events, including 23 myocardial infarctions, 24 cases of angina, 15 strokes, and 13 cases of heart failure, occurred over 4.4 years of follow-up. Death due to CVD occurred in 27 subjects, she reported at the meeting, also sponsored by the National Heart, Lung, and Blood Institute.

Total cardiovascular event rates per 100 person-years increased linearly by quartiles of CAC scores: 2.81 for those with scores of 0-56, 5.08 for scores of 57-332, 6.63 for scores of 333-916, and 7.37 for scores greater than 917. Compared with those in the lowest CAC quartile, the hazard ratio for each subsequent quartile—adjusted for age, sex, and prevalent CVD—were 1.76, 2.28, and 2.31, with the upper two reaching statistical significance.

Common carotid artery (CCA) wall thickness was similarly predictive, with event rates ranging from 2.89 per 100 person-years for those with CCA wall thickness of less than 0.95 mm up to 9.30 for those with CCA thickness of 1.23-3.14 mm. The hazard ratios for the upper three quartiles compared with the lowest were 1.43, 1.86, and 2.94. Again, the upper two were significant, Dr. Newman said.

Similar predictive ability of both CAC and common carotid artery wall thickness were seen when the analysis was repeated for incident cardiovascular disease event rates among the 373 subjects who did not already have CVD at baseline, she said.

Although the internal common carotid artery (ICA) wall thickness was more highly correlated with the coronary artery calcium score than was the common carotid artery wall thickness, the relative risks between ICA wall thickness and mortality were not as strong as for the other two measures. With ICA, even the 1.50 hazard ratio for total cardiovascular disease events between the lowest quartile (less than 1.01 mm) and the highest (2.13-6.15 mm) was not significant. ■

Race Linked to Risk Of Premature CAD

BY HEIDI SPLETE
Senior Writer

WASHINGTON — Race was a strong predictor of premature coronary artery disease, with white and Asian Indian patients more likely to have PCAD than black and Hispanic patients in a study of 416 patients aged 40 years and younger, Amit Amin, M.D., reported at the Clinical Research 2005 meeting.

Dr. Amin, of the John H. Strong Hospital of Cook County, Ill., and his colleagues conducted a retrospective study of cardiac risk factors in patients who underwent coronary angiography between 1993 and 2001. The study may be the first to assess premature coronary artery disease (PCAD) in a predominantly nonwhite population, Dr. Amin noted in an oral presentation of a poster.

About 30% of the patients were black, and 20% were Hispanic; their mean age was 36 years. The overall prevalence of PCAD in the study population was 33%. Diabetes, dyslipidemia, and smoking were significant predictors of PCAD in the study population as a whole, Dr. Amin said at the meeting, sponsored by the American Federation for Medical Research.

Dyslipidemia had no significant impact on PCAD in the subset that combined white and Asian Indian patients, but dyslipidemia increased the odds of PCAD approximately threefold in the subset of black and Hispanic patients.

About half the study population had risk factors of hypertension and smoking. Dyslipidemia, diabetes, and smoking were among the strongest modifiable risk factors; obesity was not a significant independent risk factor for PCAD in this study.

The overall mortality rate was 5.8% at about 3.5 years' follow-up. ■

Cardiovascular Risk Biomarkers Not Yet Ready for Clinical Use

BY SHERRY BOSCHERT
San Francisco Bureau

SAN FRANCISCO — None of the newer biomarkers being evaluated as possible predictors of cardiovascular risk have been studied enough to be considered ready for clinical use, Michael H. Alderman, M.D., said at the annual meeting of the American Society of Hypertension.

Conventional risk factors such as blood pressure, insulin resistance, diabetes, obesity, lipids, and family history account for 50% of cardiovascular risk, so any biomarkers that could further gauge risk would be useful. A biomarker is a substance that can be measured precisely in serum or urine and is related to subsequent occurrence of cardiovascular disease—such as cholesterol, said Dr. Alderman of Albert Einstein College of Medicine, New York.

A handful of newer, more precise biomarkers appear to be more intimately associated with the development of cardiovascular disease and look like they will be useful. These include C-reactive protein, neurocytokines, and uric acid. So far, however, there is "suggestive, but for the most part not yet convincing, evidence that these new biomarkers add to the predictive value already contained in the markers that we have," Dr. Alderman said at a press briefing during the meeting, where he gave a summary of reports on the newer biomarkers.

To be useful, a new risk marker would have to make a contribution beyond what's obtained from conventional risk markers. "I don't think that's been formally tested" with the newer biomarkers, he said.

Tests for the new risk marker would have to be reproducible at different times and in different populations, and would have to define an important amount, or proportion, of risk. Lastly, an assay for the biomarker would need to be feasible and cost effective when applied to a population.

"Those kinds of questions have been asked of blood pressure screening and cholesterol screening, but haven't been asked of cytokines," for example, he said.

Dr. Alderman said he believes that uric acid is an independent risk factor for cardiovascular events, particularly in hypertensive patients, but the data supporting this are inconsistent. Other data showing that uric acid is predictive of elevated blood pressure may be more interesting and useful, he said. ■