

# Calcium Marker Seen More Often in Less Educated

BY MICHELE G. SULLIVAN  
Mid-Atlantic Bureau

Education level is inversely related to coronary artery calcium level, Lijing L. Yan, Ph.D., and colleagues have reported.

Subjects with less than a high school degree were four times more likely to have the marker than were those with more than a college degree. Preexisting cardiovascular risk factors were partly responsible, but even after adjusting for them, the risk differential remained highly significant, said Dr. Yan of Northwestern University, Chicago, and coauthors (JAMA 2006;295:1793-800).

The reason for the difference in coronary artery calcium (CAC) is something of a mystery, the researchers noted. Education-related health care discrepancies usu-

ally occur because of differences in income, socioeconomic status, access to care, adherence to therapy, and ability to navigate the health care system. "However, the association between education and CAC observed in our study was not affected by these factors related to access or treatment, because CAC is not symptomatic and the study was conducted among a relatively healthy cohort of early middle-aged adults without concurrent overt diseases," Dr. Yan and colleagues wrote.

The investigators extracted data from the large prospective observational study, Coronary Artery Risk Development in

Young Adults (CARDIA). The study examined risk factors in 3,672 urban adults (45% black and 54% female). Data were collected at baseline (ages 18-30 years) and 15 years later (ages 33-45 years). CAC scores were assessed by CT at the 15-year follow-up in 3,043 of the participants.

Comparing the 15-year data to baseline, the investigators found that significant increases in blood pressure, waist circumference, body mass index, smoking, and percentage taking antihypertensive medication were inversely associated with education.

After adjusting for age, gender, and race, those with less than a high school de-

gree were four times more likely to have CAC than were those with more than a college degree.

The risk also was significantly elevated in high school graduates (odds ratio 1.9), those with some college (1.5), and college graduates (1.2).

The differential decreased after adjusting for cardiovascular risk factors (baseline systolic blood pressure, smoking, waist circumference, physical activity and total cholesterol levels), but was still significant for those with less than a high school degree (odds ratio 2.6).

"Fundamental changes in preventive measures very early in life are required to address social and economic disparities in health," the authors said. "In addition, integrated prevention and intervention strategies effective for less educated persons are needed." ■

**Subjects with less than a high school degree were four times more likely to have coronary artery calcium than those with more than a college degree.**

## Pregnancy Complications Tied to Coronary Disease

BY BRUCE JANCIN  
Denver Bureau

ATLANTA — Consider pregnancy complications to be a red flag for premature coronary artery disease, Dr. Mimi S. Biswas said at the annual meeting of the American College of Cardiology.

She presented a retrospective cohort study involving 415 women who were evaluated for suspected CAD at Duke University, Durham, N.C., and who earlier had pregnancies managed at Duke.

Two hundred and fourteen of the women had experienced pregnancy complications, most commonly gestational diabetes mellitus, preeclampsia, preterm birth, or small or large for gestational age.

Thirty-five percent of women with a history of pregnancy complications had significant CAD detected at coronary angiography, compared with 24% without such a history.

In a multivariate analysis, Dr. Biswas and her co-investigators found that any form of pregnancy complication was associated with a 1.6-fold increased risk of significant CAD at angiography and a 2.3-fold increased risk of cardiac mortality.

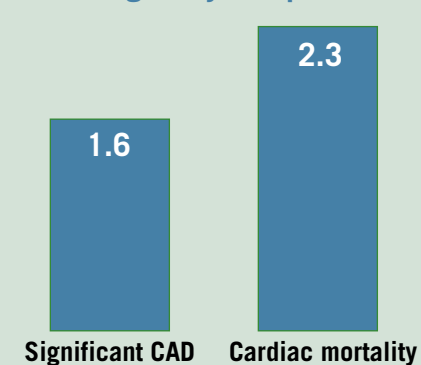
Other factors that were determined to be predictors of significant CAD were hyperlipidemia, diabetes, smoking during pregnancy, and being white as opposed to black, said Dr. Biswas, who is clinical director the Women's Heart Care Clinic at the university.

Median age at delivery in this study was 28 years. Median age at cardiac catheterization was 41 years; among the 10% of women who died, the median age was 42. Median age at the time of first myocardial infarction was 43 years.

In future studies, Dr. Biswas said, the interdisciplinary Duke team plans to delve into the mechanisms underlying the observed association between pregnancy complications and premature CAD, focusing on thrombotic abnormalities, coagulopathies, hormonal changes, vascular alterations, and genetic profiling.

The investigators are also interested in seeing whether aggressive primary prevention efforts beginning immediately after a complicated pregnancy reduce the risk of premature CAD, and whether a similar preventive thrust that includes smoking cessation and prepregnancy weight loss efforts reduces the incidence of pregnancy complications, she added. ■

### Relative Risk of CAD Increases With Pregnancy Complications



Note: Based on a study of 415 women.  
Source: Dr. Biswas

## Nontraditional Plasma Markers May Help Characterize Coronary Risk

BY ELAINE ZABLOCKI  
Contributing Writer

SPARKS, NEV. — Many patients with "normal" levels of LDL cholesterol go on to develop heart disease. "It is an okay but not great predictor of coronary risk," Dr. James A. Underberg said at the annual meeting of the American College of Preventive Medicine.

He urged physicians to look at nontraditional biomarkers that offer new insight into coronary risk and the disease process.

With LDL cholesterol, particle size is not a predictor of risk, said Dr. Underberg, president of the New York Preventive Cardiovascular Society. Instead, "particle number is a predictor and is driving the risk in these patients," he said.

The problem is that LDL cholesterol concentrations often fail to reflect the number of LDL particles and the coronary disease risk associated with them; the number of LDL particles varies widely among patients with similar LDL cholesterol levels. Several treatments are available for lowering the number of LDL particles, including statins, bile acid sequestrants, niacin, fibrates, and cholesterol absorption inhibitors.

"Counseling about dietary and lifestyle changes tends to get lost in the rush of daily practice because it takes time, but I think it's important," added Dr. Underberg, also of New York University. "Please note that recommended dietary changes should emphasize fiber and plant phyosterols, not just a low-fat, low-cholesterol diet."

Dr. Underberg also reviewed the importance of lipoprotein (a) as a nontraditional biomarker in cardiovascular risk assessment. It has limited utility as a screening test, but can be a useful measure in patients with a family history of premature coronary disease.

When other risk factors are at an intermediate level, lipoprotein (a) can be useful in deciding how aggressively to treat. Once it has been

tested, there is no need to repeat the measurement because it doesn't vary greatly over time.

The high-sensitivity C-reactive protein (CRP) test is another nontraditional but valuable method for assessing cardiovascular risk. CRP is involved in a variety of processes, and probably plays a role in the development of atherosclerosis.

CRP helps to predict coronary risk, and can be used as a prognostic indicator in acute MI. CRP levels do fluctuate, so it is reasonable to repeat this test after 2-3 weeks. For example,

CRP levels rise in various inflammatory conditions including acute illness and viral infection, and after dental work.

Physicians should be more aggressive when considering statin use in younger women whose risk justifies use of these drugs. The Food and

Drug Administration requires a "do not use if you are pregnant or breast-feeding" label on prescription statins because of concerns about teratogenic effects. "Many younger women at high risk for cardiac problems are undertreated," Dr. Underberg said.

"Many older women are not counseled about pregnancy risk when using statins, and they should be because they may still be considering childbearing," he added.

He encouraged physicians to discuss this issue with their patients. In order to treat a younger, high-risk, sexually active woman with statins, consider informed consent and an agreement about use of birth control. If her plans change, the woman should stop using statins 2-3 months before stopping birth control. Consider hydrophilic statins (pravastatin and rosuvastatin) for use in women of child-bearing age, since these drugs are less likely to pass the blood-placenta barrier.

Dr. Underberg is on the speakers' bureau and/or receives research funding or consulting fees from Pfizer Inc., AstraZeneca, Sankyo Co., LipoScience Inc., DiaDexus Inc., and Forest Laboratories Inc. ■

**LDL particle number is driving the risk. The problem is that LDL cholesterol concentrations often fail to reflect the number of LDL particles.**