

# Teen Dyslipidemia Portends Carotid Thickening

BY SHERRY BOSCHERT

Adolescents with dyslipidemia—especially those who were overweight or obese—were more likely than were adolescents with normal lipid levels to have increased carotid artery intima-media thickness by young adulthood, a study of 1,711 people found.

Also, the single set of cut points used in the National Cholesterol Education Program (NCEP) guidelines worked as well as the age- and sex-specific cut points derived from growth curve data in National Health and Nutrition Examination Surveys (NHANES) for predicting increased carotid intima-media thickness in young adults (*J. Am. Coll. Cardiol.* 2009;53:860-9 [doi:10.1016/j.jacc.2008.09.061]). The finding argues for using the simpler, fixed NCEP approach rather than the percentile-based NHANES approach, reported Costan G. Magnussen of the University of Tasmania (Australia).

Mr. Magnussen and his asso-

ciates analyzed data from three large population-based, prospective cohort studies: the Finnish Cardiovascular Risk in Young Finns Study, the U.S.-based Bogalusa Heart Study, and the Australian Childhood Determination of Adult Health Study. Lipid and lipoprotein levels were measured in adolescents between the ages of 12 and 18 years and again when they were between the ages of 29 and 30 years, at which time they also had an ultrasound to measure carotid intima-media thickness, a surrogate for the risk of developing atherosclerosis.

In a previous analysis of this same data set, Mr. Magnussen and his associates found that adolescents with borderline or high-risk dyslipidemia were significantly more likely than were those with normal lipid levels to have dyslipidemia as adults after a mean follow-up of 20 years (*Circulation* 2008;117:32-42).

In the current study, adoles-

cent dyslipidemia increased the relative risk for high intima-media thickness in adulthood by 60%-250%, and the higher risk was seen regardless of adult lipid and lipoprotein levels.

Adult carotid intima-media



**Obese teens with abnormal lipid levels are likely headed for real changes in their vascular beds as adults.**

DR. WILLIAMS

thickness was substantially higher in those who had been overweight or obese adolescents with dyslipidemia. The investigators estimated that overweight or obese 15-year-olds with dyslipidemia would show a difference in intima-media thickness of 0.11 mm in males or 0.08 mm in females by age 35 years, compared with normal-weight 15-year-olds with normal cholesterol levels.

Increased intima-media thick-

ness in young adulthood provides “a more solid end point than we’ve had before,” said Dr. Roberta Williams, who was not involved in the study.

“If you are overweight/obese and have abnormal lipid levels, it is highly likely that you are headed for real changes in your vascular bed as an adult,” said Dr. Williams, chair of pediatrics at the University of Southern California, Los Angeles. She said she has no conflicts of interest related to this topic.

The positive predictive value of adolescent dyslipidemia was low (ranging from 11% to 37% depending on weight and type of dyslipidemia), a fact that may be explained in part by normal adolescent fluctuations in levels of lipoproteins, which are “building blocks” for some hormones, she said. As a result, it’s hard to tell which adolescents with dyslipidemia will go on to have increased intima-media thickness.

But the study found a high negative predictive value (ranging from 81% to 90%), meaning that adolescents without dys-

lipidemia are unlikely to develop cardiovascular disease as young adults.

In an editorial commenting on the study, Dr. Stephen R. Daniels noted that the findings do not settle the question of whether all adolescents or targeted populations should be screened for dyslipidemia. Current guidelines recommend screening based on family history or the presence of other risk factors such as obesity, diabetes, or hypertension.

The study addresses neither the morbidity and mortality outcomes after adolescent dyslipidemia is identified, nor the costs or acceptability of screening, noted Dr. Daniels, professor and chairman of pediatrics at the University of Colorado at Denver (*J. Am. Coll. Cardiol.* 2009;53:870-1 [doi:10.1016/j.jacc.2008.11.037]).

Dr. Magnussen reported no conflicts of interest related to this study. Dr. Daniels has been a consultant for Abbott Laboratories and Merck/Schering-Plough Pharmaceuticals, which market anticholesterol medications. ■

## Maternal Obesity Doubles Risk of Neural Tube Defect

BY MARY ANN MOON

Maternal obesity is associated with a significantly increased risk of fetal structural anomalies, including neural tube defects and cardiac malformations, according to a meta-analysis.

The risk for some of these anomalies also was elevated among women who were overweight but not obese. Future studies should investigate whether there is a dose-response relationship between maternal weight and risk of structural abnormalities, said Katherine J. Stothard, Ph.D., and her associates at Newcastle University, Newcastle upon Tyne, England (*JAMA* 2009;301:636-50).

The researchers reviewed 39 relevant articles in the English literature and performed a meta-analysis of 18 that were the most scientifically sound, excluding studies with fewer than 150 cases of a particular congenital anomaly and studies of abnormalities that were chromosomal or syndromic in origin. They included cases in which pregnancies were terminated when congenital anomalies were discovered.

Compared with mothers at recommended body weights, obese mothers were nearly twice as like-

ly to have a pregnancy affected by neural tube defects, including spina bifida and anencephaly. Their risk ranged from 1.2 to 1.7 times to have a fetus with a heart anomaly, a facial anomaly such as cleft palate or cleft lip, or other anomalies including anorectal atresia, hydrocephaly, and limb reduction.

Some anomalies could not be examined in this meta-analysis because studies of those defects were not sufficiently powered to detect significant effects. However, the review showed that the association with maternal obesity approached significance for omphalocele, craniosynostosis, and simultaneous multiple anomalies.

Both neural tube defects and cardiac anomalies also were more likely to occur in mothers who were overweight but not frankly obese. Future studies should assess structural congenital anomalies across “the complete range of [body mass index],” Dr. Stothard and her associates said.

“Many of the congenital anomalies implicated in this review have similar developmental timing and responsiveness to folic acid, suggesting a common underlying etiology,” they added.

Dr. Stothard received funding from BDF Newlife. ■

## Calcium, Vitamin D Supplement May Aid Weight Loss in Some

BY MITCHEL L. ZOLER

Calcium and vitamin D supplement appeared to decrease lipid intake and may be an adjunct to weight loss with a low-calorie diet in women who usually eat a very low-calorie diet, a study with 13 women showed.

“To our knowledge, the present study is the first to report in human subjects a possible association between calcium and vitamin D supplementation body, fat, and variables influenced by appetite control,” wrote Geneviève C. Major and her associates from the department of social and preventive medicine, Laval University, Quebec City.

The results suggest that “a calcium plus vitamin D supplement might be necessary for people with very low-calorie intake to achieve a successful weight loss,” they added (*Br. J. Nutr.* 2009;101:659-63).

“Our hypothesis is that the brain can detect the lack of calcium and seeks to compensate by spurring food intake, which obviously works against the goals of any weight-loss program,” said Angelo Tremblay, Ph.D., senior researcher on the study and professor of social and preventive medicine at Laval University, in a statement. “Sufficient calcium intake seems to stifle the desire to eat more.”

The Laval researchers screened 234 women who lived in the Quebec City area, and enrolled 84 who were overweight or obese and had a typical calcium intake of less than 800 mg/day. All were placed on a weight-loss diet of 2,900 kJ/day, and were randomized to receive a calcium and vitamin D supplement or placebo.

The supplement, taken twice daily, contained 600 mg of elemental calcium and 5 mcg vitamin D. Nineteen women dropped out after enrollment, and another two were excluded from the final analysis because of significant deviations from the study protocol. This left 63 women available for analysis. Their average age was 43, and their average body mass index at baseline was 32 kg/m<sup>2</sup>.

After 15 weeks, weight and fat loss were similar for the supplement and control participants. But a subgroup analysis showed a treatment effect in 13 people who entered the study with a daily calcium intake of 600 mg/day or less.

Among the seven people in this subgroup who received the calcium and vitamin D supplement, the average change in body mass index at the end of the study was a loss of 2.2 kg/m<sup>2</sup>, compared with their baseline level. Their average loss in fat mass was 4.7 kg, and their average reduction in percent body fat was a reduction of 3.5%. During the study, the average reduction in daily lipid intake in this subgroup was 18 g.

All these changes were statistically significant, compared with the six people who entered the study consuming 600 mg/day or less of calcium and were assigned to the placebo group. In this group, body mass index dropped by an average of 0.5 kg/m<sup>2</sup>, their average loss of fat mass was 1.2 mg, their average reduction in percent body fat was 1.0%, and their average daily lipid intake rose by 8 g.

Providing adequate calcium intake with a supplement could help a weight-reduction diet succeed, the researchers said. ■