Low GH in Adults May Raise Cardiovascular Risk

BY JEFF EVANS

WASHINGTON — A low level of growth hormone in obese adults is independently associated with increased carotid intima media thickness, which may translate into an elevated risk of cardiovascular disease and a severe metabolic phenotype, according to the results of a prospective, observational study.

Building on evidence gathered from previous studies of growth hormone (GH) levels in obese men and women, Dr. Hideo Makimura and his colleagues in the neuroendocrine unit and program in nutritional metabolism at Massachusetts General Hospital, Boston, analyzed stimulated GH secretion levels and other cardiometabolic risk factors in 102 lean and obese individuals.

"Taken together, these data suggest that strategies to increase growth hormone secretion may improve cardiovascular risk in obesity," Dr. Makimura said during the presentation of his study at the annual meeting of the Endocrine Society.

Studies including frequent blood sampling of GH have shown 75% less 24-hour GH secretion in obese men, compared with age-matched lean men. Other studies have found that 64% of obese men have a peak stimulated GH level of less than 9 mcg/L in standardized GH-releasing hormone-arginine testing, whereas less than 1% of lean men have such a level.

Reduced GH has been associated with an increase in carotid intima media thickness (cIMT), a measure of atherosclerosis, in 45 overweight and obese women.

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Dr. Makimura and his associates followed 33 lean individuals, 55 obese individuals who had sufficient growth hormone, and 14 obese individuals who were deficient in growth hormone (peak stimulation GH level of 4.2 mcg/L or less). The groups had mean ages in the low to mid 40s.

The participants were matched for age, sex, race, tobacco use, and blood pressure. The obese groups also were matched for body mass index and visceral adiposity measured by an abdominal CT scan. None of the participants was known to have hypopituitarism.

Lean individuals had a mean BMI of 22.5 kg/m^2, whereas GH-sufficient obese participants had a mean BMI of 37.2 kg/m^2 and GH-deficient obese participants had a mean BMI of 40.7 kg/m^2.

In a univariate analysis, peak growth hormone correlated negatively with cIMT. GH-deficient obese participants had a greater mean cIMT than did lean participants, but there was no statistically significant difference in cIMT between the obese groups.

The researchers obtained the same results when they used more liberal cutoffs that defined GH deficiency as peak stimulated GH secretion concentrations of less than 5 mcg/L or less than 9 mcg/L.

Dr. Makimura and his associates found in univariate analyses that peak stimulated GH also was negatively correlated with the amount of visceral adipose tissue, as well as with LDL cholesterol, triglycerides, C-reactive protein, tumor necrosis factor–alpha, and measures of insulin sensitivity. Other univariate analyses revealed positive correlations between peak stimulated GH and both HDL cholesterol and adiponectin.

The association between peak stimulated GH and cIMT remained significant in separate multivariate regression analyses that controlled for demographic factors, traditional cardiovascular disease risk factors (tobacco use, systolic blood pressure, and levels of cholesterol and fasting blood glucose), metabolic variables (visceral adipose tissue, BMI, HDL and LDL cholesterol, triglycerides, fasting glucose, and fasting insulin), or inflammatory markers (C-reactive protein, adiponectin, and tumor necrosis factor–alpha).

Dr. Makimura concluded that these GH-related cardiometabolic risk factors may mediate the association between reduced GH secretion in obesity and increased cIMT.

The study was funded by grants from the National Institutes of Health. Dr. Makimura disclosed no relevant conflicts of interest. ■

Obesity Prevalence Higher Among Blacks, Hispanics

BY MIRIAM E. TUCKER

Prevalence of obesity was 51% higher for blacks and 21% higher for Hispanics, compared with whites in the United States during 2006-2008, according to Centers for Disease Control and Prevention data.

An analysis of data from the Behavioral Risk Factor Surveillance System surveys revealed an overall obesity rate of 25.6% for non-Hispanic blacks, non-Hispanic whites, and Hispanics. Individually, blacks had an obesity rate of 35.7%, Hispanics 28.7%, and whites 23.7%, the CDC said in Morbidity and Mortality Weekly Report (2009;58: 740-4).

Obesity was defined as a body mass index of 30 kg/m^2 or greater.

The pattern was consistent across most U.S. states. However, state obesity prevalences by race varied considerably. For blacks, the range was from 23.0% in New Hampshire to 45.1% in Maine. For Hispanics, obesity rates ranged from 21.0% in Maryland to 36.7% in Tennessee. And for whites, the range was from 9.0% in the District of Columbia to 30.2% in West Virginia.

By sex and racial/ethnic group, black women had the greatest prevalence of obesity (39.2%), followed by black men (31.6%), and Hispanic women (29.4%), the report said. White women had the lowest prevalence, 21.8%. Possible reasons for the population differences include differing behaviors surrounding food and exercise, attitudes and cultural norms, and lack of access to healthful foods in many minority neighborhoods, the CDC noted.

"If we have any hope of stemming the rise in obesity, we must intensify our efforts to create an environment for healthy living in these communities," said Dr. William H. Dietz, director of CDC's Division of Nutrition, Physical Activity, and Obesity.

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The CDC currently provides funding and technical assistance to 25 states to develop their own effective obesity prevention and control programs, the report said. As part of this funding, states are implementing their own evidence-based policies, systems, and environmental strategies to address health disparities. For example, the New York State Department of Health uses both federal and state funds to increase access to fruits and vegetables for low-income, primarily minority populations. ■

Nebivolol Monotherapy Curbed BP in Obese African Americans

BY PATRICE WENDLING

CHICAGO — Monotherapy with the cardioselective beta-1 blocker nebivolol improved vascular function and significantly reduced blood pressure in high-risk, obese African Americans with recently diagnosed stage 1 hypertension, in an open-label study of 43 patients.

The findings are encouraging because the observed vasodilatory effects may be protective against cardiovascular and renal disease in African Americans, a group at high risk of these diseases and in whom hypertension treatment with conventional beta blockers is often suboptimal, Nadya Merchant, Ph.D., and associates reported at a meeting sponsored by the International Society on Hypertension in Blacks.

Mean systolic blood pressure decreased from 143.8 mm Hg at baseline to 133.0 mm Hg in 33 patients who completed 8 weeks of treatment with nebivolol (Bystolic). Diastolic blood pressure decreased from 90.4 mm Hg to 83.6 mm Hg.

Significant improvements were seen in aortic augmentation index, which decreased from 16.6% to 11.1% post treatment, and in time to wave reflection, decreasing from 164 milliseconds to 137 milliseconds. These findings suggest nebivolol improves arterial compliance, said Dr. Merchant, a research fellow in the cardiology department at Emory University in Atlanta.

She noted there was also quite a significant jump in flow mediated dilation, which increased from 3.4% before treatment to 11% post treatment. Finally, levels of erythrocyte extracellular superoxide dismutase increased with nebivolol treatment from 465.2 units/mL to 537.4 units/mL, suggesting increased bioavailability of nitric oxide.

"These findings imply that nebivolol, if used by obese hypertensive African Americans, can first of all decrease blood pressure significantly, but also there may be some positive vascular changes and therefore protection against the development of cardiovascular and renal disease," she said.

In the current trial, patients received nebivolol 5 mg per day and were titrated to 10 mg/day if at week 2 there was no change in blood pressure. Their average body mass index was 36.5 kg/m^2, and their baseline blood pressure ranged from 140 to 159 mm Hg (systolic) and 90 to 99 mm Hg (diastolic) in the seated position. None of the patients in the study withdrew because of adverse events, although there was a 25% dropout rate, Dr. Merchant said.

Forest Pharmaceuticals Inc., which markets nebivolol, provided an unrestricted grant and the study drug. Dr. Merchant is also director of investor relationships for InVasc Therapeutics Inc., a biopharmaceutical company in Tucker, Ga., that develops drugs for diabetes and cardiovascular diseases. ■