Obesity Soaring in Young Adults With Type 1

BY DOUG BRUNK

NEW ORLEANS — The rate of obesity appears to be increasing more quickly among young adults with type 1 diabetes compared with national prevalence data, results from a 5-year, single-center study showed.

At the same time, obesity significantly increased the likelihood of having elevated systolic and diastolic blood pressures and LDL cholesterol levels, and reduced HDL cholesterol levels, after adjusting for demographic factors, Samuel L. Ellis, Pharm.D., reported at the annual scientific sessions of the American Diabetes Association. "We need to continue this research and look at the impact of obesity on progression and complications," he said.

While obesity is closely related to metabolic syndrome and type 2 diabetes in older adults, little is known about the prevalence and associated clinical effects of obesity in patients with type 1 diabetes. "There are limited data outside of the clinical trial population such as those in the Diabetes Control and Complications Trial," said Dr. Ellis of the department of clinical pharmacy at the University of Colorado Denver School of Pharmacy, Aurora.

He and his associates evaluated the electronic medical records of all patients with type 1 diabetes aged 18-50 years who received care at the Barbara Davis Center for Childhood Diabetes in Aurora during 2000-2005. Patients were excluded if they were pregnant during the study period or if they had type 2 diabetes.

The number of patients seen per year ranged from 1,141 in 2000 to 1,573 in 2005. The mean age of patients at baseline was 23 years and their mean hemoglobin A_{1c} level was 8.5%.

Patients were followed for the primary outcome of progression to obesity, defined as a body mass index of 30 kg/m^2 or higher; overweight was defined as a BMI of 25-29.9 kg/m^2.

Secondary outcomes studied included the effects of obesity on blood pressure, lipids, and HbA_{1c} levels.

Dr. Ellis reported that the number of patients with a body mass index of 30 kg/m^2 increased 5.3 percentage points during the study period from 10.4% in 2000 to 15.7% in 2005. That is significantly higher than the obesity rate increase of 3.9 percentage points in the general population based on data from the 2000-2004 National Health and Nutrition Examination Survey, as well as the obesity rate increase of 3.4 percentage points based on data from the Colorado Behavioral Risk Factor Surveillance System between 2000 and 2005.

Patients in the overweight and obese groups had significantly greater LDL levels during the study period compared with patients who had a BMI of less than 25 kg/m^2. "This correlated at any given time period to about a 10- to 15-mg/dL difference," Dr. Ellis said.

In addition, patients in the overweight and obese groups had significantly reduced HDL concentrations at all time periods compared with those in the healthy BMI group. "We also noticed that those individuals who were obese had significantly lower HDLs in 2003, 2004, and 2005," Dr. Ellis said.

A similar pattern was seen from a systolic BP standpoint. Patients in the healthy BMI group had fairly normal systolic blood pressures, "but patients in the obese group had elevated systolic blood pressures throughout the time period," he said. "There were significant differences between the obese and the healthy BMI groups as well as between the obese and overweight groups."

At the same time, diastolic blood pressures in the obese group were 5-10 mm Hg higher than those in the healthy BMI group, and 2-4 mm Hg higher than those in the overweight group.

Mean HbA_{1c} values throughout the study period were significantly lower in the obese group compared with patients in the healthy BMI group (8.41% vs. 8.06%, respectively). This finding may be the result of aggressive insulin therapy to lower HbA_{1c}, which in turn results in weight gain, Dr. Ellis said in an interview. "But usually we don't see this degree of weight change with a decrease in HbA_{1c}," he said.

Dr. Ellis said that the study's observational, single-center design makes it difficult "to create an external validity that we can take outside of the state of Colorado."

Dr. Ellis disclosed that he has served as a paid consultant for Merck. ■

Diabetes Raises CVD Hospitalization Risk Despite Secondary Prevention Medication

BY MIRIAM E. TUCKER

NEW ORLEANS — Among patients with established cardiovascular disease, diabetes increased the risk for secondary cardiovascular hospitalization or death by 42% in a prospective analysis of data from more than 12,000 members of Kaiser Permanente Northwest.

That increased risk was seen after adjustment for a wide range of risk factors associated with cardiovascular events, and in the setting of relatively high use of guideline-recommended medications for secondary prevention.

"Cardiovascular disease prevention in patients with diabetes remains the Holy Grail. Despite widespread use of secondary prevention medications, the risk of CVD was still high. It seems unlikely that 'more of same' will be the answer," Gregory A. Nichols, Ph.D., said at the annual scientific sessions of the American Diabetes Association.

The study, funded by GlaxoSmithKline, is the first to document CVD hospitalizations and all-cause mortality in patients with and without diabetes outside of a clinical trial, said Dr. Nichols of Kaiser Permanente NW, Portland, Ore.

The study population comprised 12,278 patients who were added to Kaiser's cardiovascular disease registry during 2000-2005 and followed through 2008 or until they died or left the health plan. Of the registry patients, 2,384 (19%) had diabetes and 9,894 (81%) did not. In both groups about 60% were male, and the mean age at baseline was 66 years.

The mean body mass index was significantly higher in the diabetic patients than in the nondiabetic patients (32.6 and 29.6 kg/m^2, respectively). Although there were significant differences in blood pressure and LDL cholesterol levels, these factors were well controlled in both groups.

Over 4 years, 17% of the diabetes patients had a CVD hospitalization, versus 10% of those without.

DR. NICHOLS

Use of pharmacotherapy for CVD prevention was high in both groups, but the patients with diabetes were significantly more likely than were those without to be receiving antiplatelets (86% vs. 71%), ACE inhibitors and/or angiotensin receptor blockers (60% vs. 40%), beta-blockers (76% vs. 67%), and statins (71% vs. 64%).

Nonetheless, over a mean follow-up of nearly 4 years, 17% of the diabetes patients had a CVD hospitalization, compared with 10% of those without, a significant difference. Death occurred in 15% of the diabetes patients, compared with 13% of the nondiabetic patients, a nonsignificant difference. Cardiovascular disease hospitalizations occurred at an age- and sex-adjusted rate of 41 per 1,000 person-years in the diabetes group, compared with 25/1,000 in those without diabetes, Dr. Nichols reported.

The composite outcome—CVD hospitalizations and death—was greater in the diabetic group (32% vs. 23%), primarily owing to the difference in hospitalizations, he said.

Significant predictors of the composite outcome included age 65 or greater (hazard ratio 1.79), chronic kidney disease (HR 1.75), depression (1.35), and statin use (0.86). After full adjustment for those factors as well other demographic and clinical factors and medication use, the patients with diabetes were 40% more likely to be hospitalized for CVD, 34% more likely to die of all causes, and 42% more likely to experience the composite outcome.

One limitation of this study is that diabetes status was assessed only at baseline. "Undoubtedly, some portion of nondiabetic patients developed it during follow-up. Their events would be misclassified, thus making our estimates of the relative risk attributable to diabetes conservative," noted Dr. Nichols, who disclosed that he has received research funding from GlaxoSmithKline, Merck & Co., Novartis Pharmaceuticals, and Novo Nordisk. ■

Uncontrolled High Blood Pressure Doubles Diabetes Risk

Patients with uncontrolled hypertension are twice as likely to develop diabetes as are those whose blood pressure is well controlled, a prospective study has found.

The study followed 1,754 patients enrolled in a hypertension clinic network in Naples, Italy, for up to 3.5 years. At baseline, the patients' mean age was 52 years, and all had normal fasting glucose levels. Blood pressure was considered uncontrolled if it exceeded 140/90 mm Hg while the patient was taking antihypertensive medication.

Uncontrolled hypertension occurred in 712 (41%) of the patients. Those with uncontrolled hypertension were significantly younger (51 vs. 53 years), and had a significantly higher heart rate than did those with controlled hypertension, Dr. Raffaele Izzo of Federico II University Hospital in Naples, and his colleagues reported (Diabetes Care 2009;32:845-50).

During follow-up, 109 (6%) of the patients developed diabetes. These patients were older (56 vs. 52 years), and had significantly higher body mass index, fasting glucose levels, uric acid, and triglycerides. They were significantly more likely to have metabolic syndrome (61% vs 21%).

After the researchers controlled for age at the time of first visit, gender, baseline systolic blood pressure, family history, fasting glucose, BMI, and physical activity, the rate of diabetes was twice as high among those with uncontrolled blood pressure. The risk of diabetes tripled when the regression model replaced fasting glucose and BMI with the modified Adult Treatment Panel–III definition of metabolic syndrome.

The authors reported no conflicts of interest.

—Michele G. Sullivan