Diabetes Complications Seen in Adolescents

BY MIRIAM E. TUCKER

NEW YORK — Early diabetes complications were seen in a significant proportion of 821 adolescents with type 1 diabetes for just 2-5 years.

Up to one in five of the adolescents had early indicators of eye, kidney, and/or nerve complications. The findings support early screening for diabetes complications as recommended by some—but not all—published consensus guidelines, Dr. Yoon Hi Cho said at a joint meeting of the Lawson Wilkins Pediatric Endocrine Society and the European Society for Pediatric Endocrinology.

The 821 patients were all seen at the Children's Hospital at Westmead, Sydney, between 1990 and 2006. They were aged 11-17 years, with a type 1 diabetes duration of 2-5 years (median 3.8) and a median hemoglobin A_{1c} level of 8.9%.

Early retinopathy, defined as one microaneurysm or hemorrhage on seven-field stereoscopic fundus photography, was detected in 9% of the patients.

Albumin excretion rate (AER) was measured for overnight urine collections. Early nephropathy, defined as a borderline elevation of AER of 7.5 to less than 20 mcg/min, was seen in 22% of the adolescents. Microalbuminuria, defined as an AER of 20 mcg/min or greater, was identified in 3%. Peripheral nerve abnormalities on thermal and vibration thresholds at the feet—measured by thermal threshold tester and biothesiometer—were found in 22% of the patients, said Dr. Cho, a clinical endocrinology fellow at the hospital.

The proportions with borderline AER elevation rose from 16% of those aged 11-13 years to 23% of 13- to 15-year-olds to 25% of those aged 15-17 years. There was no significant effect of age for retinopathy (seen in 6%, 10%, and 11% of the three groups) or for peripheral nerve abnormalities (seen in 27%, 19%, and 22%). The rates of microalbuminuria remained low (4% or below). There was no significant difference in hemoglobin A_{1c} level between the three age groups (8.2%, 8.5%, and 8.6%), Dr. Cho said.

Retinopathy was significantly related to an elevated diastolic blood pressure level. A mean AER of 7.5 mcg/min or greater was associated with increased age, diabetes duration, and systolic BP. Peripheral nerve abnormalities were correlated with a higher BMI. There was no significant relationship between any of the complications and hemoglobin A_{1c} level, cholesterol level, sex, insulin dose, or insulin regimen, she said.

The American Diabetes Association recommends retinopathy screening within 5 years of the onset of diabetes and nephropathy screening after a diabetes duration of 5 years in children aged 10 years and older.

"Longitudinal analysis will help define predictors of early complications and the potential for modifying [their] natural history," Dr. Cho said.

She stated that she had no relevant financial disclosures. ■

Atrial Fibrillation Risk Significant In Female Diabetics but Not Male

BY MIRIAM E. TUCKER

VIENNA — Diabetes was a significant risk factor for atrial fibrillation among women but not men in an analysis of electronic medical records from a large HMO database.

The study also found that both the prevalence and the incidence of atrial fibrillation (AF) were more than 40% higher among patients with diabetes than in those without. After accounting for other risk factors, diabetes increased the risk for AF by 16%, Gregory A. Nichols, Ph.D., said in an interview held prior to his scheduled presentation of the findings at the annual meeting of the European Association for the Study of Diabetes.

The results were published in Diabetes Care (2009;32:1851-6).

Although diabetes was previously known to be a risk factor for AF, this analysis is the first to assess its independent contribution by controlling for factors common to both conditions, and also the first to identify a strong sex difference in the relationship between the two conditions, said Dr. Nichols, a researcher at Kaiser Permanente Center for Health Research, Portland, Ore.

"Clinicians may be disincentivized to look for atrial fibrillation in women because it is such a male-dominated condition, but when diabetes is present in women the risk for atrial fibrillation is the same as it is for a man," Dr. Nichols said in the interview.

Data were analyzed for 10,213 individuals who were members of the Kaiser Permanente Northwest diabetes registry as of Jan. 1, 1999, and another 7,159 patients who entered the registry by Dec. 31, 2004, for a total of 17,372.

The subjects had a mean age of 58 years, and 51% were male. Those with diabetes were heavier and had higher blood pressures and were significantly more likely to have a history of stroke, hypertension, and heart failure. At baseline, the prevalence of AF was 3.6% among those with diabetes versus 2.5% among age and sex-matched controls without diabetes, a significant 44% difference. The difference was most significant in the 55- to 64-year age group, with 3.0% of the diabetics versus 1.6% of the nondiabetics found to have AF, an 87% difference. The difference in AF prevalence between the diabetic and nondiabetic groups became smaller in the older age groups, he said.

Men had an overall greater prevalence of AF than did women, but the difference between the diabetic and nondiabetic groups was far greater in the women. In the 55- to 64-year age group, 2.2% of the nondiabetic versus 3.3% diabetic men had AF, a 50% difference. For the women, 1.0% vs. 2.7% had AF, a 170% difference, said Dr. Nichols.

The risk from female sex was larger than the overall increased risk conferred by body mass index greater than 30 kg/m^2 or by a systolic blood pressure greater than 140 mm Hg.

The incidence analysis compared 16,057 diabetes patients who did not have AF at baseline with 16,471 without diabetes or AF at baseline. Over a mean follow-up of 7.2 years, the diabetic patients developed AF at an age/sex–adjusted incidence rate of 9.1/1,000 person-years, compared with 6.6 in the nondiabetic patients.

For men, AF incidence per 1,000 person-years was 10.8 for diabetics and 8.3 for nondiabetics, a 31% difference. For the woman, those figures were 7.6 vs. 5.0, a difference of 46%.

After controlling for age, sex, race, body mass index, systolic blood pressure, cigarette smoking, and comorbidities including ischemic heart disease, stroke, valvular disease, hypertension, and heart failure, diabetes still increased the AF risk by 16% overall.

But in men the increase was a nonsignificant 9%, compared with a highly significant 26% in women. The risk from female sex was larger than the overall increased risk conferred by either body mass index greater than 30 kg/m^2 (22% increased risk) or by a systolic blood pressure greater than 140 mm Hg (24% increased risk), Dr. Nichols noted during the interview.

Dr. Nichols stated that he had no relevant financial disclosures. ■

Treatment of Mild Gestational Diabetes Shows Modest Benefit

BY MARY ANN MOON

Treating mild gestational diabetes lowered the risks of fetal overgrowth, shoulder dystocia, cesarean delivery, and gestational hypertension, as well as decreasing maternal weight gain, according to a report in almost 1,000 women.

However, treating mild gestational diabetes did not improve the composite primary outcome of neonatal mortality, hypoglycemia, hyperbilirubinemia, hyperinsulinemia, and birth trauma in a multicenter, randomized trial designed to establish whether such treatment reduced perinatal and obstetric complications.

"The findings from our trial confirm a modest benefit from the identification and treatment of women with mild carbohydrate intolerance during pregnancy," said Dr. Mark B. Landon and his associates in the National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network.

The investigators assessed 958 women with mild gestational diabetes—defined as a fasting glucose level of less than 95 mg/dL plus two to three timed glucose measurements that exceeded established thresholds—between 24 and 31 weeks' gestation. A total of 473 were randomly assigned to receive standard prenatal care and 485 to receive formal nutritional counseling, diet therapy, and insulin as needed (N. Engl. J. Med. 2009;361:1339-48).

The intervention group performed daily self-monitoring of fasting and postprandial blood glucose levels. The researchers verified compliance with glycemic monitoring and documented that target thresholds were achieved.

There was no difference between the two groups in the primary composite outcome of neonatal death and complications known to be associated with maternal hyperglycemia, nor did individual rates of complications (neonatal hypoglycemia, hyperbilirubinemia, birth trauma, and elevated cord-blood C-peptide levels) differ significantly, Dr. Landon of Ohio State University, Columbus, and his colleagues said.

However, the intervention significantly reduced mean birth weight, neonatal fat mass, the rate of large-for-gestational-age infants, and the rate of infants weighing 4,000 g or more.

Cesarean delivery was significantly less frequent in the intervention group (27%) than in the control group (34%), as were shoulder dystocia, gestational hypertension, and preeclampsia.

Moreover, both maternal body mass index at delivery and maternal weight gain during pregnancy were lower in the intervention group than in controls.

These study findings "provide further compelling evidence that among women who have gestational diabetes mellitus and normal fasting glucose levels, treatment that includes dietary intervention and insulin therapy, as necessary, reduces rates of fetal overgrowth, cesarean delivery, and preeclampsia," Dr. Landon and his associates wrote.

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