

Diabetes Risk Follows Ethnic Lines by Age 9

BY JENNIE SMITH

Children of African, African Caribbean, and South Asian descent show precursors of type 2 diabetes risk that reflect the elevated risk patterns of adults in those ethnic groups, according to a new study of nearly 5,000 9- and 10-year-old schoolchildren living in three U.K. cities.

"The new epidemic of early onset type 2 diabetes occurring in many Western societies affects all sections of the population, and key preventive measures in childhood ... are likely to be widely desirable. However, there is a particularly urgent need for preventive measures in high-risk ethnic groups, in which the benefits of prevention are potentially greater," the study investigators reported (*PLoS Medicine* 2010 April 20 [doi:10.1371/journal.pmed.1000263]).

Peter Whincup, Ph.D., of St. George's, University of London, and colleagues took body measurements and blood samples from primary school students of 1,153 white European, 1,306 South Asian, and 1,215 African or African Caribbean descent, along with 294 children with roots in other parts of Asia and 828 mixed-race children, using ethnicity data reported by their parents. A total of 80% of the children in the three largest groups were U.K. born; all lived in Leicester, Birmingham, or London. The researchers measured the children's adiposity and recorded the socioeconomic status and immigration history of the children's families.

Children of South Asian descent, compared with their white peers, had significantly higher levels of glycated hemoglobin (2.1% higher), fasting insulin (30%), triglyceride (12.9%), and C-reactive protein (43%), along with lower lev-

els of HDL cholesterol (2.9% lower). Children of African or African Caribbean descent had higher levels of glycated hemoglobin (1.9% higher), insulin (22.9%), C-reactive protein (21%), and—"paradoxically"—HDL cholesterol (1.9%), with lower levels of triglyceride (10.6% lower), they reported.

The remaining ethnic and mixed-race groups were not included in the comparative analysis.

The patterns seen among South Asian children closely mirrored those of adults in that U.K. ethnic group, which has roughly triple the diabetes risk of white U.K. citizens. The African and Caribbean children's patterns mirrored those of adult African Caribbeans, who also bear a risk significantly higher than that of white Europeans, the researchers noted.

The higher insulin and glycated hemoglobin levels seen among the black and South Asian children were particularly worrisome, Dr. Whincup said in an interview. "These are predictors in long-term diabetes risk, and the fact that the patterns are corresponding closely with the adult experience suggests that these new generations will be affected as well."

None of the differences in risk profiles could be attributed to variations in adiposity among ethnic groups or to socioeconomic status.

Dr. Whincup said he did not view the differences in risk precursors as entirely hereditary. "It may be a complex interaction between genetics and environment." He said his team hopes to study how childhood nutrition and physical activity, and early life factors, may influence ethnic differences in diabetes risk.

The research was funded by the Wellcome Trust and the British Heart Foundation. Dr. Whincup and his colleagues declared no conflicts of interest. ■

Retinopathy Found in 34% of Latino Diabetes Patients

BY MARY ANN MOON

The incidences of diabetic retinopathy and macular edema are higher in Latinos than in other racial and ethnic groups, according to a population-based study of more than 4,000 individuals.

This finding from the Los Angeles Latino Eye Study (LALES), the largest study to assess the incidence and progression of these disorders in an American Latino population, emphasizes "the importance of timely dilated ophthalmologic examinations for Latinos who have diabetes and are at risk for vision-threatening retinopathy," said Dr. Rohit Varma of the Doheny Eye Center, Los Angeles, and his associates.

LALES assessed eye disease among 4,658 self-identified Latinos aged 40 years or older living in L.A. County. Baseline clinical examinations were performed between 2000 and 2003, and 4-year follow-up examinations were performed between 2004 and 2008.

Dr. Rohit and his colleagues examined data for a subset of 775 diabetic subjects participating in LALES.

The overall incidence of diabetic retinopathy in either eye was 34%; the annualized incidence was 7%. In comparison, the annualized incidence was 4% for the largely white population in the Blue Mountains Eye Study; and in two other studies—the Liverpool Diabetic Eye Study and the Australian Diabetes, Obesity, and Lifestyle Study—the overall incidences were 4% and 14%, respectively, and the annualized incidences were less than 1% and less than 3% among whites, respectively.

In LALES, the incidence of retinopathy declined with age. A total of 45% of those in their 40s were affected, vs. 24% of those aged 70 years or older.

The incidence of diabetic retinopathy was nearly twice as high in patients not receiving diabetes treatment (33% vs. 17%). Among patients who had any degree of diabetic retinopathy at baseline, the disorder progressed during the study period in 39%. Progression was more likely to occur in younger patients, and was not associated with duration of diabetes.

Fourteen percent of patients who had retinopathy at baseline showed improvement at follow-up. None reported having undergone retinal photocoagulation therapy, "indicating that their improvement was related to some factor other than surgery," the researchers wrote (*Am. J. Ophthalmol.* 2010 Feb. 9 [doi:10.1016/j.ajo.2009.11.014]).

At follow-up, "incidence of diabetic retinopathy in the second eye (among those with DR in one eye at baseline) was nearly twice as high as compared to [the] incidence in the first eye (among those with no DR at baseline).

"This finding is significant from a health-related quality-of-life perspective because individuals with disease in only one eye tend to rely heavily on their contralateral eye for daily tasks. When the healthy eye also develops disease, the ability of people to complete vision-related tasks and normal activities becomes severely impaired," Dr. Varma and his associates wrote.

The overall incidence of macular edema in either eye was 5.4%. The rate of macular edema increased significantly with duration of diabetes: less than 3% among those diagnosed within 1 year vs. 11% in those diagnosed at least 15 years earlier.

The National Institutes of Health and Research to Prevent Blindness Inc. supported the study. The authors reported no conflicts of interest. ■

Abnormal Vascular Stiffness Prevalent in Type 1 Adolescents

BY KATE JOHNSON

Abnormal vascular stiffness, a marker of early vascular disease, is found in adolescents with type 1 diabetes at a rate of about 32% in boys and 6% in girls, according to an analysis of data from the SEARCH for Diabetes in Youth Study.

Type 1 diabetes was an independent predictor of all measures of vascular stiffness, even after adjustment for cardiovascular risk factors, said Dr. Elaine M. Urbina of Cincinnati Children's Hospital Medical Center and her colleagues (*J. Pediatr.* 2010;156:731-7).

"Patients with [type 1 diabetes], even at a young age, are at an increased risk for vascular stiffness and endothelial func-

tion by nature of their disease," Dr. Janet H. Silverstein, a pediatric endocrinologist at the University of Florida, Gainesville, wrote in an accompanying editorial. "Modifiable risk factors should be monitored and, if they are abnormal, aggressive treatment undertaken."

The study involved 535 adolescents with type 1 who were part of the larger SEARCH study group; their average age was 14.6 years and 13% were "nonwhite." The 241 healthy control subjects (average age 17.8 years, 58% "nonwhite") were selected from an

ongoing study of vascular function in adolescents.

VITALS

Major Finding: Decreased BrachD, a measure of peripheral vascular stiffness, was the most common abnormality in the type 1 diabetes group, found in 33.1%.

Data Source: A study of 535 adolescents with type 1 diabetes, who are part of the SEARCH study, and 241 healthy controls.

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Height, weight, body mass index, and waist circumference were recorded for all subjects, as were glycated hemoglobin A_{1c}, fasting glucose, triglycerides, and total, LDL, and HDL cholesterol.

Vascular function testing in-

cluded measurement of systolic, diastolic, and mean arterial blood pressure, pulse, heart rate, and brachial artery distensibility (BrachD). Arterial stiffness was assessed by measurement of pulse wave velocity for the trunk, arm, and leg, plus augmentation index, adjusted to a standard heart rate of 75 beats per minute (Aix-75).

As expected, the study noted higher BP and heart rates, HbA_{1c}, fasting glucose, and total and LDL cholesterol, and lower HDL cholesterol in the type 1 subjects.

Greater arterial stiffness in the

type 1 group was shown in lower BrachD, higher Aix-75, and higher age-adjusted pulse wave velocity trunk measurements.

Decreased BrachD, a measure of peripheral vascular stiffness, was the most common abnormality, in 33.1% of the type 1 patients. Peripheral stiffness correlates with left ventricular hypertrophy and is associated with peripheral artery disease and vessel calcification, the investigators noted. "The independent correlates of vascular dysfunction in this cohort of youth with [type 1 diabetes] included modifiable (higher BP, greater adiposity, and more atherogenic lipid profile) and nonmodifiable CV risk factors (older age, non-white race/ethnicity and male sex)." ■