Poor Childhood Cognition, Type 2 Diabetes Linked

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Poor cognitive function in childhood appears to be associated with the development of type 2 diabetes later in life, according to a study of more than 9,000 individuals.

"Poorer cognition function at age 11 years was associated with an increased risk of type 2 diabetes by age 42 years," wrote Gunilla M. Olsson, Ph.D., of Uppsala University in Sweden and her colleagues (Diabetes Care 2008;31:514-6).

Type 2 diabetes previously has been associated with decreased cognitive function in adults, particularly older adults. The new findings suggest that "very early detection of subclinical disease and treatment may be of value in protecting against cognitive deficits," the researchers noted.

The study involved individuals enrolled in the National Child Development Study, which is following all people born in the United Kingdom between March 3 and 9, 1958—approximately 17,000 births. Cognitive function was assessed at age 11 years using tests for general ability (verbal and nonverbal) and reading comprehension. Confirmed or possible diagnoses of type 2 diabetes at age 16 years were based on a medical examination and record review. Interviews at ages 33 and 42 years identified those with type 2 diabetes with a question about diabetes that does not require insulin injections. Pregnancy-related diabetes was excluded.

In all, 11,419 individuals were still participating at age 42 years. After excluding those with a confirmed or suspected diagnosis of diabetes (type 1 or 2) by age 16 years and those with type 1 diabetes or insufficient information on diabetes, 9,182 individuals were available for analysis.

Logistic regression analysis was used to estimate the risk of subsequent type 2 diabetes for each standard deviation change in test score. Models were adjusted for sex, birth weight, gestational age, parental social class, maternal smoking during pregnancy, age that mother left school, mother's age at delivery, presence of mild or severe mental retardation, disability, and ethnic origin. Separate models were adjusted for body mass index at age 7 years. Additional models were used to examine type 2 diabetes diagnosed after 33 years of age.

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Cohort members with a diagnosis of type 2 diabetes after age 16 years had significantly lower assessment scores at age 11 years, even after adjustment for potential confounders. In all, 69 subjects were diagnosed with type 2 diabetes between the ages of 16 and 42 years. The average general ability score for those without a subsequent diagnosis of type 2 diabetes was 45 (out of a possible score of 79), compared with a score of 37 for those later diagnosed with type 2 diabetes. Likewise, the average reading comprehension score for those without a subsequent diagnosis of type 2 diabetes was 17 (out of a possible score of 35), compared with 13 for those later diagnosed with type 2 diabetes.

The odds ratios indicate a reduction in risk of later type 2 diabetes with one standard deviation increase in test scores—OR 0.67 for general ability scores and OR 0.58 for reading comprehension scores.

While exclusion of those with diabetes onset before age 33 years reduced the sample size with available data, lower test scores at age 11 years were still significantly associated with increased type 2 diabetes risk. This association of poorer childhood cognitive function with type 2 diabetes onset after age 33 years suggests that there might be a long delay between impaired cognition in childhood and symptomatic onset of type 2 diabetes, according to the study investigators.

"It is possible that cognitive deficits present in childhood influence lifestyle factors that increase the risk of type 2 diabetes. Alternately, poorer glycemic control or other shared risk factors may influence both cognitive development and the risk of type 2 diabetes," the researchers wrote. ■