Hyperglycemia Tied to Increased Cardiac Risk

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SAN FRANCISCO — Hyperglycemia and ethnicity each were independently associated with a greater risk for cardiovascular problems in a large, prospective study of 48,444 New Zealanders.

The magnitude of the association between hyperglycemia and cardiovascular events in the study was smaller than has been suggested in previous studies, but the current data confirm the association between glycemic control and cardiac risk, Dr. Paul L. Drury said at the annual scientific sessions of the American Diabetes Association.

The information came from a New Zealand Ministry of Health program in which primary care physicians across the country were paid to collect and report data on patients with type 2 diabetes who had no history of cardiovascular disease and who were attending free annual visits for their diabetes. The investigators matched the glycemic data with national data on hospital admissions and death records to identify first cardiovascular events (ischemic heart disease, cerebrovascular accident, transient ischemic attack, or peripheral vascular disease).

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During follow-up lasting a median of 2.4 years, 12% of the cohort had a first cardiovascular event. Each 1% increase in hemoglobin A_{1c} (HbA_{1c}) level was associated with a hazard ratio of 1.08, a statistically significant increase in risk, reported Dr. Drury, clinical director of diabetes services for the Auckland (New Zealand) District Health Board, and his associates. He has been an adviser to Eli Lilly & Co. and to Merck & Co., which make antidiabetes drugs.

The association between HbA_{1c} and a first cardiovascular event was significant for both sexes. The results accounted for the effects of age at diagnosis, duration of diabetes, gender, ethnicity, socioeconomic status, smoking, systolic blood pressure, body mass index, the ratio of serum total cholesterol to HDL level, and the urine albumin-creatinine ratio.

Secondary analyses showed that Maori ethnicity was associated with a hazard ratio of 1.3 for developing a cardiovascular event, compared with non-Maori patients, after the researchers controlled for other factors. The study also confirmed the importance of classical risk factors for cardiovascular problems in patients with diabetes, Dr. Drury said. Diabetes duration, a high systolic blood pressure, a high lipid ratio, and macroalbuminuria each were significantly associated with increased risk. "BMI, to our surprise, was not relevant when all other variables were considered," Dr. Drury said.

Patients had had diabetes for a median of 3 years and showed "reasonable glycemic control," he noted, with a median HbA_{1c} level of 7.1%. The median age was 60 years and the median BMI was 31; 15% of patients were current smokers and 23% were former smokers. The mean blood pressure was 138/81 mm Hg.

A previous meta-analysis of 17 studies found an increased risk of cardiovascular disease with increasing HbA_{1c} levels (Ann. Intern. Med. 2004;141:421-31). The hazard ratio for each 1% increase in HbA_{1c} was 1.18 for cardiovascular disease and 1.17 for stroke in the meta-analysis, compared with 1.08 for a cardiovascular event in the current study. The meta-analysis considered data only from 7,435 highly selected subjects with type 2 diabetes, Dr. Drury noted, while the current large study encompassed 60%-70% of all New Zealanders with type 2 diabetes.

The 12% rate of first cardiovascular events in the current study was higher than seen in previous studies. "We did raise our eyebrows at the event rate," he said. "Much of that is not the harder material. If you look at an independent analysis of just myocardial infarction and stroke, rates are comparable to other published clinical trials" when not including things like transient ischemic attacks or angina.

Separate, controlled studies are needed to determine if treatment to avoid hyperglycemia would reduce the risk for cardiovascular events, he said. ■