A 1% Rise in HbA_{1c} Bumps Up Cardio Risk by 11%

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ROME — For every 1% rise in baseline hemoglobin A_{1c}, the risk that a patient with type 2 diabetes would later develop coronary heart disease increased by 11% in a large observational study.

Furthermore, there was a 25% decreased risk of cardiovascular disease (CVD) in patients with a median hemoglobin A_{1c} (HbA_{1c}) of 6.7%, compared with 7.9%, Dr. Katarina Eeg-Olofsson of the University of Gothenburg (Sweden) reported at the annual meeting of the European Association for the Study of Diabetes.

The study looked at the effect of glycemic control on the development of cardiovascular complications and mortality in 16,701 individuals with type 2 diabetes who were logged in the Swedish National Diabetes Register and who had not yet experienced a cardio- or cerebrovascular event.

"The role of improved glycemic control in reducing cardiovascular risk is currently under debate," Dr. Eeg-Olofsson said.

She added that recently presented data from three large randomized trials looking at this question—the Veterans Affairs Diabetes Trial, the Action to Control Cardiovascular Risk in Diabetes (ACCORD) trial, and Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation (ADVANCE)—had failed to provide conclusive evidence that lower HbA_{1c} levels are protective against the development of cardiovascular events.

"The aim of our study was to examine the longitudinal association between glycemic control and cardiovascular complications," said Dr. Eeg-Olofsson. She noted that the patients studied were unselected and that the definition of type 2 diabetes used was treatment by diet or with oral hypoglycemic agents, alone or with insulin, and patient age of 40 years or older at diagnosis with diabetes.

The current study was unable to distinguish among specific drugs that were used, however, because this information was not initially logged in the database. More detailed analysis is perhaps possible in the future because more detailed information is now being collected.

The progress of the patients identified within the register as having type 2 diabetes was monitored for 6 years, linking HbA_{1c} levels to the number of first-incident fatal or nonfatal coronary heart disease (CHD) events, strokes, and CVD cases, and deaths due to any cause as defined by ICD codes. Within this time frame, there were 2,128 fatal or nonfatal coronary heart disease events, 1,289 fatal or nonfatal stroke events, 3,122 fatal or nonfatal CVD events, and 1,570 all-cause mortality events.

The mean age of the patients studied was 64 years and the mean duration of diabetes was 8 years. HbA_{1c} levels were an average of 7.6% at baseline. Systolic blood pressure was an average of 148 mm Hg, half of all patients were using antihypertensive medications, and 11% were taking lipid-lowering drugs.

Dr. Eeg-Olofsson and associates found that 13.9% of patients were current smokers, and just over one-fifth (22%) already had microalbuminuria. One-quarter of patients were treated by diet alone, 12% with an oral hypoglycemic agent alone, 37% with an oral hypoglycemic agent plus insulin, and a further 28% were using only insulin.

For 4,259 patients, the HbA_{1c} levels were known both at baseline and at follow-up, and the baseline characteristics of this subgroup of patients were similar to the entire cohort.

Event rates for the first-incident fatal and nonfatal CHD, stroke, and CVD, and all-cause mortality were 25.7, 15.5, 38.6, and 18.4 per 1,000 person-years.

The unadjusted hazard ratios (HRs) for these events were 1.17, 1.12, 1.14, and 1.17.

The HRs remained significant, even after adjustment for a variety of factors—age, sex, diabetes duration, body mass index, smoking, systolic blood pressure, microalbuminuria, and type of hypoglycemic, antihypertensive, or lipid-lowering therapy being used.

The hazard ratios for CHD, stroke, and CVD rose significantly for every 1% rise in baseline HbA_{1c}, said Dr. Eeg-Olofsson.

For example, the hazard ratio for CHD at a baseline HbA_{1c} of 6.0%-6.9% was 1.0 and for an HbA_{1c} level of 7.0%-7.9% was 1.26. At an HbA_{1c} of 8.0%-8.9% and 9.0%-9.9%, the hazard ratio for CHD had risen to 1.42, and when HbA_{1c} levels exceeded 10.0%, the hazard ratio was 1.62. ■