Diabetic Elderly Are at Risk for Hypoglycemia

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FROM THE ANNUAL SCIENTIFIC SESSIONS OF THE AMERICAN DIABETES ASSOCIATION

ORLANDO — Hypoglycemic episodes were common despite high hemoglobin A_{1c} levels among 40 elderly community-living adults with diabetes who underwent continuous glucose monitoring.

"Raising A_{1c} goals may not be adequate to prevent hypoglycemia in this vulnerable population," Dr. Medha N. Munshi said.

Guidelines from the American Diabetes Association and the American Geriatric Society advise that the usual recommended hemoglobin A_{1c} target of less than 6.5%-7.0% might be relaxed for elderly adults who have a history of severe hypoglycemia, limited life expectancy, advanced diabetes complications, or extensive comorbidity (Diabetes Care 2010;33 [suppl 1]).

In practice, this has been interpreted as a goal of less than 8%. The ADA guideline was based on level "C" evidence, and no study has ever clearly demonstrated that raising the HbA_{1c} target actually reduces the risk of hypoglycemia, said Dr. Munshi, director of the Joslin Diabetes Center geriatric programs at Beth Israel Deaconess Medical Center, Boston.

The current study used blinded continuous glucose monitoring (CGM) for 72 hours or longer in 40 community-dwelling diabetes patients who were seen at the Joslin Diabetes Center. To be included, they had to be older than 69 years and have a hemoglobin A_{1c} level greater than 8%.

The study group was 60% female and 80% white. Mean age was 75 years and mean HbA_{1c} was 9.3%. The patients took a mean of eight medications per day, with more than half (55%) on insulin alone, and another 38% on insulin plus one or more oral agents. Two-thirds had type 2 diabetes and the rest had type 1. Nearly a quarter were living alone, said Dr. Munshi, also with Harvard Medical School, Boston.

Patients performed four fingerstick glucose measurements per day and kept daily diaries of hypoglycemic symptoms, diet, and physical activity. One or more hypoglycemic events, defined as a glucose value less than 70 mg/dL, occurred in 26 of the 40 patients. Nearly three-fourths of the events involved glucose levels of 50-59 mg/dL, and in just under half the glucose dropped below 50 mg/dL.

The 26 patients experiencing hypoglycemia did not differ from the 14 without such events in patient characteristics including age, diabetes duration, HbA_{1c}, or insulin treatment. There were also no differences between those who did and did not have hypoglycemia in the comorbidities cognitive dysfunction, depression, falls in the past 6 months, number of medications, hypertension, or vision/hearing problems.

Of the 26 with hypoglycemia, 12 had HbA_{1c} levels above 9%. "Even a high A_{1c} doesn't preclude lows. Hemoglobin A_{1c} measures the mean. There are wide fluctuations in this population," Dr. Munshi noted.

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Major Finding: One or more hypoglycemic events occurred in 26 of 40 patients despite hemoglobin A_{1c} values above 8%. Of 102 hypoglycemic episodes, 95 were not recognized by fingerstick testing or by symptoms.

Data Source: Study using blinded continuous glucose monitoring for 72 or more hours in 40 community-dwelling diabetes patients seen at a tertiary diabetes center.

Disclosures: The American Diabetes Association funded the study. Dr. Munshi stated that she had no conflicts of interest.

There were a total of 102 hypoglycemic episodes, with a mean duration of 3 hours per patient. Nocturnal episodes lasted for a mean of 2.5 hours. "The duration of episodes was quite concerning," she said.

Surprisingly, more than half (58%) of the 102 hypoglycemic episodes occurred among the 16 patients with type 2 diabetes, with a mean duration of nocturnal hypoglycemia nearly twice that of the hypoglycemia in the type 1 patients (2.9 vs. 1.6 hours). "Even the type 2 patients had wide glycemic excursions," Dr. Munshi commented.

Also of concern, the majority of episodes (95 of the 102) were not recognized by fingerstick testing or by the patients' symptoms. Moreover, there were no significant relationships between severity of hypoglycemia and age, type of diabetes, duration, HbA_{1c}, treatment, or living alone.

In a follow-up interview, Dr. Munshi cited a previous study she and her colleagues published last year, showing that simplification of complex insulin regimens by using C peptide to assess whether patients could eliminate or reduce the amount of insulin taken, and adding oral agents instead, reduced hypoglycemic episodes without deterioration of glycemic control (Am. J. Med. 2009;122:395-7).

"Elderly patients with other comorbidities are unable to follow complex insulin regimens appropriately and end up having wide fluctuations in their glucose values. If a treatment regimen is designed with consideration for an elderly patient's self-care abilities, risk of hypoglycemia can be reduced," she said.

And when available, CGM can be extremely helpful for elderly patients, Dr. Munshi said. ■