Hypoglycemic Events Raise Risk of Dementia in Elderly

BY PATRICE WENDLING
Chicago Bureau

CHICAGO — Hypoglycemic episodes increase the risk of dementia in elderly patients with diabetes, according to the first study to evaluate the association in this older patient population.

The findings suggest that possible benefits of tight glycemic control in the elderly should be weighed against potentially negative consequences on the aging brain, Dr. Rachel A. Whitmer and associates reported in a poster at the annual meeting of the American Academy of Neurology.

"We are just starting to learn that having people very tightly controlled, if they are elderly, may not be the best thing," she said in an interview.

The analysis looked at 16,806 elderly patients with type 1 and type 2 diabetes from the Kaiser Permanente of Northern California Diabetes Registry. The patients' mean age was 66 years, 55% were male, 60% were white, and 16,667 had type 2 diabetes.

The researchers identified 1,510 patients from this larger cohort who were hospitalized at least once for hypoglycemia from 1998 to 2003. The same patient records were checked again between 2003 and Jan. 15, 2007, and 1,837 patients (11% of the total) had a diagnosis of dementia.

Compared with those with no episodes, patients with at least one hypoglycemic episode had a 45% increased risk of dementia (hazard ratio 1.45), whereas those with at least two episodes had a twofold increased risk (HR 2.27), and those with at least three episodes had a threefold increased risk of dementia (HR 3.52), after adjusting for age, body mass index, race, education, gender, and duration of diabetes.

The effect remained strong after further adjustment of the data for hypertension, stroke, cardiovascular disease and end-stage renal disease (HR 1.42 for at least one event, 1.91 for at least two events, and 2.98 for at least three events); and after final adjustments for glycosylated hemoglobin levels and diabetes treatment (HR 1.36, 1.81, and 2.20 for at least one, two and three events, respectively), said Dr. Whitmer, an investigator with the research division, Kaiser Permanente, Oakland, Calif.

Of the 1,510 patients with reported hypoglycemic events, 589 were receiving only insulin, 446 only oral hypoglycemic agents, 358 both insulin and oral hypoglycemic agents, and 117 were on a diabetes diet only.

To address the potential for reverse causality, in which patients might have early dementia not diagnosed in their charts that could cause them to stop taking their diabetes medications and develop hypoglycemia, the investigators evaluated 929 cases in which dementia was diagnosed only after 2005. The effect of severe hypoglycemia on dementia was even more robust in the 2-year lag model, with hazard ratios of 1.22 (for at least one episode), 1.93 (for at least two episodes), and 2.85 (for at least three episodes), after adjustment for all variables.

"[Elderly diabetics] are a more vulnerable group… we need to have a better understanding of how glycemic control could affect brain health," said Dr. Whitmer." ■

Simple, Balanced Diet Is Best for Those Who Need to Lose Weight

BY MARY ELLEN SCHNEIDER
New York Bureau

PHILADELPHIA — Weight was once an afterthought in the treatment of diabetes, dyslipidemia, and hypertension, but that approach has now shifted, with many physicians seeing weight management as a first-line treatment.

But many physicians are still uncomfortable counseling their patients about nutrition and don't know what to recommend, Diana Cullum-Dugan said at Endocrinology in the News, sponsored by Boston University, INTERNAL MEDICINE NEWS, and FAMILY PRACTICE NEWS.

A range of diets have been studied in regard to weight loss efficacy and their effects on cholesterol and glucose. The best diet is the one patients will follow, said Ms. Cullum-Dugan, a registered dietitian who is in private in practice in Boston.

A study comparing the Atkins diet (very low carbohydrate, high fat), the Zone diet (moderate carbohydrate, moderate fat), Weight Watchers (high carbohydrate, moderate fat), and the Ornish diet (high carbohydrate, very low fat) and found that with each of the diets 20%-25% of subjects sustained modest weight loss beyond 1 year (JAMA 2005;293:43-53).

Ms. Cullum-Dugan tries not to focus on what patients are giving up, but instead, on what new, healthy foods they can add to their diets to feel full, such as olive oil, avocado, nuts, fruits, and vegetables. "Let those crowd out some of [the] high-fat choices they might make."

In general, there is consensus around having a diet that is 30% fat, 40% carbohydrate, and 30% protein, with 25-38 g/day of fiber, Ms. Cullum-Dugan said. With a diet of less than 40% carbohydrates, patients risk having a diet with too much fat and not enough fiber, but if they fill 60%-65% of their diet with carbohydrates, they run the risk of not getting enough fat and protein.

Protein can include lean meats, fish, legumes, and low-fat dairy. Emerging data suggest protein plays a role in energy intake, satiety, and long-term weight loss (Diabetes Care 2004;27:S55-7).

Fat intake should be about 30%-35% of the total caloric intake, with less than 10% from saturated fats. Ms. Cullum-Dugan doesn't usually counsel patients to limit their fat intake unless they are obese but tries to help them choose foods with monosaturated fats and omega-3 polyunsaturated fats, such as nuts, olive and canola oil, flaxseed, and fish. She advises fish oil for those who won't eat fish.

Daily fiber intake should be 25-38 g/day, with the target for women at the lower end of that range and for men, at the upper end. Half cup of all-bran cereal, an apple, a half cup of broccoli, two slices of whole wheat bread, a pear, and a half cup of lentils make up around 28 g fiber.

Ms. Cullum-Dugan also tries to get patients away from just counting calories. She recommends they fill half their plate with vegetables, a quarter with protein, and a quarter with starches. She also advises consistency–patients should eat about the same amount of food at about the same time of day. ■

Report Focuses on Problems With Insulin Pump Use in Teens

BY MIRIAM E. TUCKER
Senior Writer

Infusion pump technology for treating diabetes and pain management might pose special risks for adolescent patients, a 10-year Food and Drug Administration analysis of 1,647 medical device adverse event reports in patients aged 12-21 years suggests.

Prompted by five adolescent death reports associated with the use of insulin pumps during 2005, the agency conducted a search of its own medical device adverse events reports database for all those related to either insulin pumps or patient-controlled analgesia (PCA) pumps for adolescents from Jan. 1, 1996, through Dec. 31, 2005. Included are 1,594 reports for insulin pumps and 53 for PCA pumps, with 13 deaths in the former and 5 for the latter.

"[Adolescents] deserve careful consideration of risk and benefit for use of device technology. Studies need to further identify safety problems in this age group," said Dr. Judith U. Cope of the FDA's Division of Postmarket Surveillance and her associates (Pediatrics 2008;121:e1133-8).

However, pediatric endocrinologist Dr. Francine R. Kaufman sees the insulin pump part of the article as "an example of reporting bias" because no equivalent data are included about insulin injection regimens or the risks of diabetes itself in adolescents.

"There is evidence in the pediatric community of reduction in hypoglycemia, improvement in [hemoglobin] A_{1c}, improvement in quality of life measures with pump use. Insulin pump therapy allows for a better outcome for those children appropriately selected and willing and able to manage diabetes," Dr. Kaufman, professor of pediatrics at the University of Southern California and director of the Comprehensive Childhood Diabetes Center and head of the Center for Endocrinology, Diabetes, and Metabolism at Childrens Hospital Los Angeles, said in an interview.

Insulin pump therapy allows for a better outcome in appropriately selected children who are able to manage diabetes.

DR. KAUFMAN

The number of insulin pump adverse event reports to the FDA for adolescents increased annually over the 10-year period. There were 1,038 injuries, 528 device malfunctions, 13 deaths, and 15 events classified as "other."

Since 2003, a greater proportion of the reports were for patient injuries than for device malfunctions. Of the 499 reports in 2005, 76% were patient injuries and 22% were device malfunctions. Deaths made up 1%, and the remaining reports were classified as other.

Of the 13 insulin pump–related deaths over the period, 5 were related to either hyperglycemic or hypoglycemic complications, 3 to diabetic ketoacidosis, 1 to seizure, and 1 to coma; 3 death reports did not indicate a cause.

Of the total, 987 (62%) reported episodes of hyperglycemia, 47% indicated the patient had diabetic ketoacidosis. Of the 987 hyperglycemia reports, 7% concerned underinfusion. There were some reports of the device's need for repair, replacement, or removal, and also of device failure and/or failure to deliver.

Another 167 (10.5%) reports involved patient and device problems with hypoglycemia or overdelivery of insulin. A small number of reports were coded as incorrect use of the device, problem with self-activating key and overbolusing, error message, and alarm problems. The problem was coded as unknown for 60 of the 167 reports.

Special adolescent issues were identified in 6% (102) of the reports, including 82 resulting in hospitalization. The top three of these involved education, noncompliance, and problems during sports or other activities. Four of the reports indicated risk-taking behaviors, including two cases of insulin overbolusing that were believed to be suicide attempts. Three deaths occurred when there was no parental supervision.

"An increased risk for hypoglycemic complications may occur with binge drinking of alcohol," the investigators said.

Most of the 53 PCA pump–related events occurred in patients using the devices to treat pain associated with orthopedic conditions, cancer, sickle cell disease, and pregnancy-related events; there were 19 injuries, 21 device malfunctions, and 8 other events.

In 51% of the reports, the patient received an excess dose of medication, and in 12 of those 27 reports the patient had respiratory depression and unresponsiveness requiring ventilation and/or Narcan administration. Two patients tampered with the pump and removed morphine from the device, and one smoked marijuana while using the pump.

To report device-related problems, visit www.fda.gov/medwatch. ■

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