

Chronically High Blood Sugar Linked To Risk Of Cognitive Impairment

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The study was the first to investigate the association over time between glycosylated hemoglobin – a long-term measure of blood sugar – and the risk of cognitive difficulties, and the first to investigate that association in people without diabetes. It appears in the Volume 10, Number 4 issue of the Journal of Nutrition, Health, and Aging.

“We already know there’s a connection between diabetes and cognitive problems,” says lead author Kristine Yaffe, MD, a staff physician at the San Francisco VA Medical Center and a professor of psychiatry, neurology, and epidemiology at the University of California, San Francisco. “We were interested in what this measurement would tell us about a group of women with and without diabetes who were followed for four years. Nobody has really looked at that before.”

The glycosylated hemoglobin test measures the percentage of hemoglobin – the oxygen-bearing protein in red blood cells – that is bound to glucose. Unlike the standard diabetic blood sugar test, which measures blood sugar at the moment of testing, glycosylated hemoglobin is considered an accurate measure of blood sugar levels over the course of two to four months preceding the test. A result of seven percent or less indicates good long-term blood sugar control.

The researchers studied 1,983 post-menopausal women with a mean age of 67 years. Their baseline glycosylated hemoglobin levels were tested at the beginning of the study, and they were assessed for dementia every year for four years. At the end of the study, each one percent increase in glycosylated hemoglobin at baseline was associated with a 40 percent increased risk of developing MCI or dementia four years later.

Women with a glycosylated hemoglobin of seven percent or higher at baseline were four times more likely to develop MCI or dementia than women who tested at less than seven percent.

When the 53 women in the study known to have diabetes at baseline were excluded from the results, there was still a statistically significant association between elevated glycosylated hemoglobin and the risk of MCI or dementia.

The authors conclude, “This finding supports the hypothesis that abnormal glycemic control is linked to an increased risk of developing cognitive impairment and dementia in elderly women.”

The authors note that there are a number of possible reasons why chronically high blood sugar may cause cognitive impairment, ranging from the overall effects of diabetic complications to direct and indirect brain damage caused by high blood sugar to a possible association between the enzyme that degrades insulin and the development of Alzheimer’s disease.

“Type 2 diabetes is a very common and growing problem,” notes Yaffe. “The point is that now you can identify people who are at risk for MCI or dementia and monitor them closely with glycosylated hemoglobin. I think we need to take these people who are at risk and see whether we can target them for trials or interventions for better blood glucose control.”

Co-authors of the study were Terri Blackwell, MS, of California Pacific Medical Center; Rachel Whitmer, PhD, of Kaiser Permanente Division of Research; Katherine Kreuger, MD, of Eli Lilly and Company; and Elizabeth Barrett-Connor, MD, of UC San Diego.

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