Diabetes drug may protect the brain

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Study found patients taking metformin were 20 percent less likely to develop dementia.

(HealthDay)—The diabetes drug metformin may do more than help control blood sugar levels: New research suggests it may also reduce the risk of dementia.

Compared to people taking another class of diabetes medications called sulfonylureas, those taking metformin had a 20 percent reduced risk of developing dementia over the five-year study period.

"Metformin could have a possible neuroprotective effect in the brain," said study author Dr. Rachel Whitmer, an epidemiologist in the division of research at Kaiser Permanente in Oakland, Calif.

Whitmer, however, added a caveat: "This was an observational, retrospective, population-based study. We found an association, but didn't prove cause and effect."

Whitmer is scheduled to present the findings Monday at the Alzheimer's Association International Conference in Boston. Research presented at medical meetings should be viewed as preliminary until published in a peer-reviewed journal.

People with type 2 diabetes have double the risk of developing dementia compared to someone without diabetes, according to background information in the study. But, even though diabetes is such a significant risk factor for dementia, the researchers found that there was little research on the effect of diabetes medications on dementia risk.

To see if any therapies might offer some protection against dementia, Whitmer and her colleagues reviewed data on nearly 15,000 people with type 2 diabetes who were just starting single-drug therapy for their disease.

All of those included in the study were aged 55 or older, and all had been diagnosed with type 2 diabetes. Whitmer said none of them were newly diagnosed; some had even been diagnosed with type 2 diabetes as long as 10 years earlier. But none had been taking medications for their disease when the study began.

"They initiated one of four single-agent therapies: metformin, sulfonylureas, thiazolidinediones (TZDs) or insulin," Whitmer said.

All of these treatments lower blood sugar levels, but they work in slightly different ways.

Metformin makes muscle tissue more receptive to insulin, a hormone necessary for sugar (glucose) to get into the body's cells and tissues to provide fuel. It also decreases the amount of glucose made in the liver. Sulfonylureas stimulate the production of insulin. TZDs make muscle and fat tissue more receptive to insulin, and they decrease the amount of

glucose made in the liver. Insulin injections are used to help cover the increased need for more insulin because people with type 2 diabetes aren't able to use insulin produced by the body as efficiently.

During the study, nearly 10 percent of the patients were diagnosed with dementia. (The study was not able to differentiate between Alzheimer's disease and other forms of dementia, Whitmer said.)

Compared to people taking sulfonylureas, those on metformin had a 20 percent decreased risk of developing dementia, according to the study. There was no difference in dementia risk for those on TZDs or insulin compared to those on sulfonylureas.

The researchers controlled the data for a number of factors, including age, duration of diabetes, blood sugar control, race and education, Whitmer said.

So what is it about metformin that might help protect the brain? Whitmer said one theory stemming from animal research is that metformin may play a role in the development of new brain cells (neurogenesis). It has also been linked to reduced inflammation, she added.

One expert was excited by the findings.

"Insulin promotes the survival of certain nerve cells. A drug like metformin, [which is] an insulin sensitizer in the body, may also be an insulin sensitizer in the brain," said Dr. Richard Lipton, director of the division of cognitive aging and dementia at Montefiore Medical Center in New York City. "We know that people with Alzheimer's lose brain volume, which may be a poor replacement of nerve cells. The notion that metformin might promote neurogenesis and brain cell replacement is a very attractive hypothesis."

"The idea that how we treat diabetes could affect all-cause dementia is very exciting," Lipton said.

Whitmer hopes to do more research to determine whether the long-term use of metformin would have an even greater effect, whether larger doses make a difference and whether there would be a difference in risk reduction based on the type of dementia.

For now, she said, it's important to remember this: "The brain isn't isolated. When you think about your brain health you should be thinking about whole body health, and think about it over your life course. Dementia shows up late in life, but those changes start a decade or more before they show up. What's good for the health of the heart is also what's good for the brain."

More information: Learn more about preventing Alzheimer's disease from the National Institute on Aging.