Diabetes drug lowers risk of cardiovascular complications, kidney disease

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Researchers have shown that the glucose-lowering drug liraglutide safely and effectively decreases the overall risk of heart attack, stroke, or cardiovascular death for people with type 2 diabetes. These patients are at high risk for cardiovascular disease, which is the number one killer of people with type 2 diabetes. Liraglutide was also associated with a reduction in kidney disease and death from all causes.

The paper, published in the *New England Journal of Medicine*, details findings from a global clinical trial called "Liraglutide Effect and Action in Diabetes Evaluation of Cardiovascular Outcome Results" or LEADER. This worldwide effort of 700 institutions in 32 countries marks the first time a diabetes drug with the main goal of lowering blood sugar has demonstrated such broad benefits for patients.

"I've been excited about liraglutide for a long time because I think it's unique," said John Buse, MD, PhD, senior author of the study, director of the UNC Diabetes Care Center, and the Verne S. Caviness Distinguished Professor of Medicine at the UNC School of Medicine. "This is the first diabetes drug that has shown across-the-board benefits for cardiovascular diseases, and this suggests it plays a role in treating atherosclerosis, which is what leads to heart attacks and strokes."

The LEADER study was a randomized double-blind study of 9,340 adults with type 2 diabetes who were at high risk of heart disease. About half of the participants were given liraglutide, and half were in the placebo group. Placebo, in this case, meant that patients could take other diabetes medications to control their blood sugar. Both groups of patients were prescribed medications to address associated health problems, such as high blood pressure and high cholesterol.

The trial lasted more than three years. In the end, liraglutide was associated with:

- 13 percent lower overall risk of having a heart attack or stroke, or of dying from cardiovascular cause
- 22 percent lower risk of cardiovascular mortality
- 15 percent lower risk of all-cause mortality
- 22 percent lower risk of new evidence of advanced kidney disease

"This changes the whole conversation about treating diabetes," Buse said. "To date, people have taken diabetes drugs to lower blood sugar. Now we can say that they should take liraglutide to prevent or delay the worst things that occur commonly in diabetes - heart attacks, strokes, advanced kidney disease, and death."

Last year, researchers reported that another diabetes drug, empagliflozin, reduced death from cardiovascular events, but some of the data from that major clinical trial were unclear. Empagliflozin only showed a marginal effect on lowering heart attack risk and no benefit on limiting strokes. The drug is a SGLT-2 inhibitor; it works in the kidneys to help the body get rid of glucose.

Liraglutide is a GLP-1 agonist; it works in the pancreas to stimulate insulin secretion and reduce the production of an anti-insulin hormone - known as glucagon - which raises the concentration of blood glucose. Liraglutide also works in the brain to reduce appetite and increase satiety - the sensation of feeling full.

"The next big question," Buse said, "is can we combine these two drugs to help patients with advanced type 2 diabetes who are at severe risk of cardiovascular complications?"

Type 2 Diabetes affects more than 370 million people worldwide, according to the World Health Organization. In the United States, more than 29 million people have the disease, according to the Centers for Disease Control.

People with diabetes try to control their blood sugar with increased exercise, dietary changes, and typically the first-line medication metformin. If this regimen does not work well enough, then doctors and patients can add one of the six second-line therapies, including liraglutide, which the Food and Drug Administration approved for use in the United States in December 2014.

Last year, Buse reported news from a clinical study showing that a combination of two second-line type 2 diabetes drugs - degludec and liraglutide - was better at managing blood sugar than were traditional basal insulin shots.

"As more medications to treat type 2 diabetes come on the market, these sorts of clinical trials are invaluable measures of a drug's true benefit or lack thereof," Buse said. "Right now, liraglutide is clearly showing it is one of the best second-line therapies available. Yet, it would be best if we could reduce the burden of this disease with preventive measures, which is why early screening and interventions remain incredibly important."

Provided by University of North Carolina Health Care

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