Medical Xpress

Proteins associated with diabetic complications and increased heart disease identified

March 11 2018

Protein pathways that are closely linked to changes in both triglyceride and hemoglobin A1c levels in diabetic patients have been identified in new research by the Intermountain Medical Center Heart Institute in Salt Lake City. Credit: Intermountain Medical Center Heart Institute

Protein pathways that are closely linked to changes in both triglyceride and hemoglobin A1c levels in diabetic patients have been identified in new research by the Intermountain Medical Center Heart Institute in Salt Lake City.

The findings of two related studies bring new interest in additional research that will help healthcare providers understand the links and identify ways to intervene earlier and prevent the onset of heart disease or diabetic complications.

"Understanding the biology of how proteins interact with other cells in the body can improve patient care and help physicians prevent catastrophic events like heart attack, stroke, or death," said Stacey Knight, PhD, a researcher with the Intermountain Medical Center Heart Institute and lead author of the study. "The findings of these studies may help explain the often-increased triglyceride levels that lead to cardiovascular events for diabetic patients."

Results of the two studies on protein pathways will be presented at the American College of Cardiology Scientific Session in Orlando on March 11.

In diabetic patients, high triglyceride levels are associated with heart disease and stroke. High levels of hemoglobin A1C are also associated with increased complications like diabetic retinopathy.

For one of the studies, researchers looked at 264 patients who were enrolled in the FACTOR-64 study, which was a clinical trial designed to reduce the risks of diabetic patients for cardiovascular disease. A SOMAscan assay was used to determine the plasma levels for more than 4,000 proteins.

Researchers found a significant association between the pathways of

semaphorin and plexin, both of which have been found to the linked with diabetic retinopathy—a diabetic complication in which high blood glucose levels damage the blood vessels of the retina.

"We found that an increase of the proteins in this pathway may result in increased hemoglobin A1C—or an increased A1C increase proteins in the pathway," said Dr. Knight. "We'll need to further explore this association to identify how those two elements influence each other."

The second study looked at the same population of patients from the FACTOR-64 study and identified three protein pathways that were significantly associated with triglyceride levels:

- Insulin-like growth factor-binding protein
- Immunoglobulin
- Fibronectin

Additional research is needed to help clinicians better understand the relationships between triglyceride levels and these three protein pathways.

"These initial findings made us pause for a moment and start asking additional questions about these relationships," said Dr. Knight. "We hope to further explore these pathways to better identify where interventions may occur to help reduce risk for cardiovascular events in diabetic patients."

Provided by Intermountain Medical Center