MedicalXpress

New clues in the quest to prevent clogged arteries

April 6 2016, by Mark Derewicz

For many people, coronary artery disease (CAD) – the buildup of plaque in the heart's arteries – is an unfortunate part of aging. By studying the genetic makeup of people who maintain clear arteries into old age, researchers have identified a possible genetic basis for the disease, as well as potential new opportunities to prevent it.

"We believe that our ever-increasing population of people over 65 holds the key to understanding CAD," said Jonathan Schisler, PhD, assistant professor of pharmacology at the UNC School of Medicine and member of the UNC McAllister Heart Institute, who led the research team. "Our main goal was to try to understand why some people develop CAD and some people with similar risk factors do not, and we found that older people give us a great model to understand the natural disease process."

Schisler and his colleagues analyzed blood samples and heart scans from 143 people over age 65 who were referred to UNC Hospitals for cardiovascular screening. The analysis revealed that people with clear arteries had markedly higher levels of a protein called CXCL5, as well as genetic variants near the CXCL5 gene, compared with people with more plaque.

"CXCL5 looks to be protective against CAD, and the more CXCL5 you have, the healthier your coronary arteries are," said Schisler. "Our findings suggest that there may be a genetic basis to CAD and that CXCL5 may be of therapeutic interest to combat CAD in people."

Schisler is presenting this research at the American Society for Investigative Pathology's annual meeting this week during Experimental Biology 2016.

CAD is the most common cause of heart attacks and the leading cause of death in the United States. Despite increased awareness of its risk factors and a variety of available treatment options, CAD has remained a persistent public health challenge.

"Identifying targets that may lead to treatments or preventative measures for CAD has immense public health value and the potential to impact many people," said Schisler.

Previous studies linked CXCL5 with inflammation, leading some researchers to assume the protein was harmful. But recent research in mice suggested the protein could help limit plaque buildup by changing the composition of fat and cholesterol deposits in the arteries. Schisler's finding offers the first evidence that CXCL5 could play a protective role in people, at least in the context of CAD.

In addition to offering clues about how CAD develops, the study opens new possibilities for prevention and treatment. For example, it may be possible to develop a drug that mimics the effects of CXCL5 or that increases the body's natural CXCL5 production to help prevent CAD in people at high risk. The protein could even potentially be leveraged to develop a new, nonsurgical approach to help clear clogged arteries.

One limitation of the study is that because all participants were referred for a heart scan, the study did not include healthy patients. Further research is needed to confirm the role of CXCL5 in CAD and explore drug development opportunities.

Schisler said that for him, although the research is in its early stages, "it's

a glimmer of hope in a battle worth fighting."

"I lost both of my grandfathers to cardiovascular disease, one so early I do not even have any memories of him," said Schisler. "This has been a driving force for me to not only understand heart disease, but also find treatments that allow healthy, longer lives."

Provided by University of North Carolina at Chapel Hill School of Medicine