Protein regulating inflammation in atherosclerosis identified

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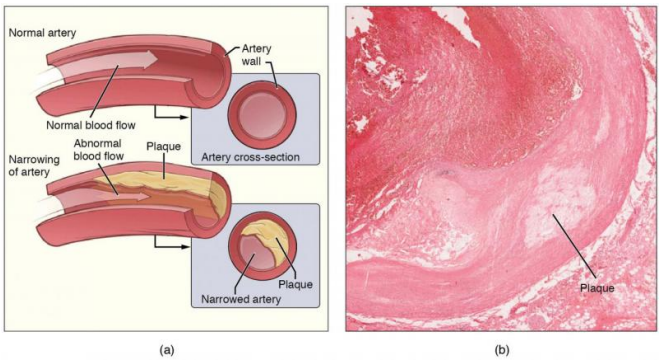

Atherosclerosis is a condition affecting the cardiovascular system. If atherosclerosis occurs in the coronary arteries (which supply the heart) the result may be angina pectoris, or in worse cases a heart attack. Credit: Wikipedia/CC BY 3.0

The protein CARD8 regulates several inflammatory proteins in people with atherosclerosis. This is shown in a new study by Örebro researchers published in the scientific journal *Scientific Reports*.

"We have shown entirely new functions associated with CARD8. These may be important in the future treatment of atherosclerosis and other inflammatory diseases," says Örebro researcher Geena Paramel.

Atherosclerosis, also known as hardening of the arteries is the primary cause of most cardiovascular diseases. The inflammation in blood vessel walls caused by atherosclerosis involves several different proteins, which in turn are regulated by the protein CARD8.

"Our study shows that CARD8 plays a crucial role in the inflammatory process in atherosclerosis," says Geena Paramel, one of the researchers behind the study and senior lecturer in biomedicine at Örebro University.

Regulates inflammation

The research team, led by Professor Allan Sirsjö at Örebro University's Cardiovascular Research Centre (CVRC), examined the functions that CARD8 plays in the cells covering the inside of blood vessels. By suppressing the CARD8 gene, they have mapped which proteins CARD8 regulates. Results show a link between high levels of CARD8 and altered levels of several other inflammatory proteins in the hardening of arteries.

These results have been confirmed in samples from a group of individuals with atherosclerosis—in collaboration with researchers at Karolinska Institutet.

"These findings are significant in that they may be key in the development of upcoming drugs for atherosclerosis. In the future, we may be able to use more targeted drugs against CARD8 in atherosclerosis," says Karin Franzén, docent in biomedicine at Örebro University and contributing authors in the study.

In a previous study, researchers have also seen a link in people who have a genetic variation in the CARD8 gene and altered levels of inflammatory proteins in the body.

"There is much that suggests that CARD8 may also be significant for several other inflammation-related diseases," says Geena Paramel.

Identify the mechanism
Örebro researchers are now planning a continued CARD8 study. In collaboration with BioReperia, a company in Linköping, they will continue mapping the role that CARD8 plays in inflammatory processes that are also central to tumor development.

"Right now, we know that CARD8 plays a crucial role in the inflammatory process in cells. We also want to understand how CARD8 affects other processes in cells," Karin Franzén explains.

More information: Geena V. Paramel et al. Expression of CARD8 in human atherosclerosis and its regulation of inflammatory proteins in human endothelial cells, *Scientific Reports* (2020). DOI: 10.1038/s41598-020-73600-4