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Stopping dangerous cell regrowth reduces risk of further heart attacks

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"After an arterial injury, the inner layer of cells in the artery begins to regrow. In the long term, this usually causes more harm than good", says Maria Gomez.

A common cause of arterial injuries is the clearing of blocked arteries often performed on patients who have had a heart attack.

"Initially the artery is opened up, but after a while new cell formation increases the risk of further heart attacks."

In animal experiments, the research groups have demonstrated the opposite effects of the two proteins. The carotid artery of rats was damaged with balloon dilation, simulating the procedure carried out on heart attack patients.

After two weeks, there was noticeably less new cell formation in the arteries that had more of the protein IRT-1. With AIF-1, the opposite effect was observed.

"The interesting thing is that both proteins are formed from the same gene and we have now found a mechanism to control the balance in the formation of the two. Using a new drug we can thus increase the amount of the 'good' protein, IRT-1. It is not an approved drug, but it has been tested on mice and appears to be tolerated well", says Maria Gomez.

The researchers have also analysed over 150 fatty deposits ('plaques')

removed from the carotid arteries of patients.

"We saw that the dangerous plaques – those that are unstable, easily rupture, are more inflamed and more often produce symptoms – contain more AIF-1. Those with a higher proportion of the protein IRT-1 are less dangerous", observes Lisa Berglund, co-author of the published study.

Diabetes patients develop more plaques, and more often dangerous ones, than non-diabetics. Diabetics have a significantly higher risk of suffering a heart attack.

The regrowth of cells in the arteries also leads to negative changes in blood flow. It may even be the case that AIF-1 is involved in the actual formation of plaques in the arteries.

Heart attacks are the most common cause of death in Sweden and many patients have repeated attacks, which are treated by clearing constrictions in the arteries of the heart using various methods.

"If we could reduce the risk of repeat attacks, this would represent very significant progress", says Maria Gomez.

More information: The study has been published in the scientific journal *Cardiovascular Research.* cardiovascres.oxfordjournals.o … /cvr.cvr309.abstract

Provided by Lund University

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