

Social stress leads to atherosclerosis

December 6 2010

Studies on genetically engineered mice show that social stress activates the immune system and accelerates the development of atherosclerosis. Commonly used drugs to reduce blood pressure, however, may stop this process. This is the conclusion of a thesis presented at the University of Gothenburg, Sweden.

Several large studies have clearly shown that there is a correlation between psychosocial stress and the risk of developing cardiovascular disease. However, little is known about why this is the case.

"The aim of my thesis was to study the underlying mechanisms by which stress leads to [atherosclerosis](#) and subsequent cardiovascular disease", explains Evelina Bernberg, researcher at the Department of Molecular and Clinical Medicine, at the Sahlgrenska Academy.

The study has been conducted using mice that have been genetically modified to spontaneously develop atherosclerosis. Using mice as experimental animals allows the scientists to study cause and effect relationships in a controlled situation.

"We found that situations that disrupt the [social environment](#) in which the mice normally live increased atherosclerosis, while more physical forms of stress did not", explains Evelina Bernberg.

The scientists discovered that [social stress](#) increased blood levels of different markers of [inflammation](#) - which previously have been shown to accelerate the development of atherosclerosis.

"When the sympathetic nervous system is activated, adrenalin is released and this increases the heart rate. We also found some evidence that the sympathetic nervous system is responsible for the release of these [inflammatory markers](#)", Evelina Bernberg relates.

This release could be reduced by commonly used blood pressure medication, beta-blockers. The same beta-blockers also reduced atherosclerosis and the release of inflammatory markers in unstressed mice, showing that the [sympathetic nervous system](#) plays an important role in the development of atherosclerosis.

"Our studies suggest that social stress that activates the immune system is also the type of stress that can lead to the development of atherosclerosis, but we need to confirm whether our studies on gene-modified mice also reflect the situation in humans. It is possible that commonly used beta-blockers to a certain extent may prevent stress from leading to atherosclerosis", says Evelina Bernberg.

Atherosclerosis is initiated when cholesterol enters the blood vessel wall and atherosclerotic plaques are formed. Atherosclerosis is the major underlying cause of [cardiovascular disease](#), such as angina, myocardial infarction and stroke.

Provided by University of Gothenburg

Citation: Social stress leads to atherosclerosis (2010, December 6) retrieved 24 April 2024 from <https://medicalxpress.com/news/2010-12-social-stress-atherosclerosis.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.