

Depression predicts increases in inflammatory protein linked to heart disease

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Jesse Stewart

(PhysOrg.com) -- Which comes first, depression or inflammation? To help solve this long standing chicken and egg conundrum, researchers led by Jesse Stewart, Ph.D., assistant professor of psychology at Indiana University-Purdue University Indianapolis asked two critical questions.

Does depression lead to elevated inflammatory proteins in the human body? Or does an increase in these proteins lead to depression? They found that the answer to the first question appears to be "yes," and the answer to the second question may be "no" among healthy adults.

The researchers report that depressive symptoms are associated with increases over time in [interleukin-6](#), an inflammatory protein that predicts cardiovascular events. In contrast, levels of interleukin-6 were not related to later increases in depressive symptoms.

The new study, published in the October 2009 issue of the journal *Brain, Behavior and Immunity*, is the first to examine both directions of the depression-inflammation connection and to measure the physical symptoms of depression, such as fatigue and sleep disturbance, in addition

to the cognitive-emotional symptoms, such as pessimism and sadness.

Several previous studies have linked depression to increased inflammatory protein levels measured at the same time. These studies, however, cannot speak to which is the cause and which is the effect. "There is two-way communication between the brain and the immune system, so we had to determine whether activation of the body's immune system sent a signal to the brain to affect mood and behavior or whether the depression activated the [immune system](#)," said Dr. Stewart, a clinical health psychologist in IUPUI's School of Science and an IU Center for Aging Research affiliated scientist.

Participants in the study were 263 healthy men and women aged 50-70 years at the start of the study. They were tested at baseline and again six years later to determine their levels of depressive symptoms and interleukin-6. Levels of C-reactive protein, another inflammatory protein, were also measured but were not related to depression.

The strength of the association of depression with future heart disease is similar to that of traditional risk factors like smoking, high blood pressure and elevated cholesterol, according to Dr. Stewart.

"Promotion of inflammation may be one pathway through which depression may 'get under the skin' to negatively influence cardiovascular health. The link to cardiovascular disease demonstrates that there may be physical as well as mental health reasons to treat [depression](#)," said Dr. Stewart.

More information: "A Prospective Evaluation of the Directionality of the Depression-Inflammation", *Brain, Behavior and Immunity*.

Source: Indiana University School of Medicine

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