

New link between depression and heart disease

Toronto, ON (July 29, 2009) – Researchers have identified an enzyme that may trigger depressive symptoms in patients with heart disease and may help to explain why general antidepressants are often not as effective for these specific patients.

“Our study confirms that depressive symptoms are associated with inflammation in patients with heart disease and suggests a mechanism by which the brain might be affected,” says Walter Swardfager, lead author of a new study and PhD candidate in the Neuropsychopharmacology Research Program at Sunnybrook Health Sciences Centre.

The research focuses on an enzyme that is part of the inflammatory process in patients with coronary artery disease (CAD). The enzyme breaks down the amino acid tryptophan and it is associated with damage to brain cells. Findings show a significant association between activation of this enzyme and the degree of depressive symptoms in these patients. They also identify a trend towards even higher levels in those suffering from clinical depression.

“This enzyme makes ‘brain unfriendly’ chemicals,” says Dr. Krista Lanctôt, principal investigator and head of the Neuropsychopharmacology Research Program at Sunnybrook. “We are trying to chase down a treatment for patients with CAD that will block the enzyme and/or prevent the inflammatory process in the first place.”

This study adds to a growing body of evidence that suggests depression worsens heart disease; in fact, it is shown to be even more of a risk factor for mortality than traditional cardiac risk factors such as high blood pressure. The prevalence of depression in patients with CAD is shown to be much higher than that of the general population, contributing to a poorer quality of life and increased mortality.

“It is important to identify biological pathways that might be involved since the excessive mortality associated with depressive symptoms remains largely unexplained,” says Swardfager.

In the study, the enzyme’s activity was specifically related to “the blues”, depressed mood, feelings of failure, loneliness, crying, sadness, and an inability to “get going”. Swardfager adds “it is not difficult to understand how these depressive symptoms could also impact physical activity levels that are crucial in maintaining good health”. The activity of the enzyme was directly related to poorer cardiopulmonary fitness and higher body mass index in the study.

There are also a number of patients who have minor depressive symptoms, and these patients are sometimes neglected as they don't meet the criteria for major depression. "Many people can relate, as they see mood changes in relatives or friends with heart disease," says Swardfager. "Even minor mood changes may be important since they are linked with poorer physical fitness."

Currently, the same antidepressants are prescribed for depression across the board. However, clinical studies suggest that traditional antidepressants may not be as effective for patients with CAD and that these heart disease patients who remain depressed despite treatment have a greater risk of mortality. This new study suggests a reason why.

"The challenge is that a large number of patients with CAD do not respond well to traditional antidepressants, and for those who've tried everything, we need new options specifically tailored to them," says Dr. Lanctôt, also an Associate Professor of Psychiatry and Pharmacology/Toxicology at University of Toronto. "The first step was to prove that this pathway is involved, and now we need to try to stop it. We hope to find a drug that can meet this specific need."

The two-year study will be published in an upcoming issue of the journal *Psychoneuroendocrinology*. Funding was provided by the Drummond Foundation, the Toronto Rehabilitation Institute and the Physicians' Services Incorporated Foundation.

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