

Antidepressant reduces stress-induced heart condition

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A drug commonly used to treat depression and anxiety may improve a stress-related heart condition in people with stable coronary heart disease, according to researchers at Duke Medicine.

Compared with those receiving placebo, people who took the antidepressant escitalopram (sold as [Lexapro](#)) were more than two-and-a-half times less likely to have mental stress-induced [myocardial ischemia](#) (MSIMI), a heart condition brought on by mental stress. The findings, published in the May 22/29, 2013 issue of the *Journal of the American Medical Association*, add to the current understanding of how [negative emotions](#) affect cardiovascular health.

In myocardial ischemia, the [heart muscle](#) does not receive enough blood flow or supply, or the supply does not meet the needs of the heart muscle. Patients with myocardial ischemia often have no noticeable symptoms, but research has shown that [emotional stress](#) can trigger such [heart conditions](#).

"Mental stress-induced myocardial ischemia is a serious condition, as patients with the condition tend to have worse [heart problems](#) compared to patients without it," said lead author Wei Jiang, M.D., associate professor of psychiatry and [behavioral sciences](#) and internal medicine at Duke. "This study showed for the first time that it is treatable with an emotion-modulating medication."

MSIMI is diagnosed based on certain changes in the heart: new wall

motion abnormality, a reduction in how much blood is pumped out of the heart's left ventricle, ischemic changes on electrocardiography tests, or a combination of these symptoms.

While MSIMI can be serious, little is known on how to treat it; previous studies looking at interventions for MSIMI were not conclusive based on small sample sizes and conflicting results.

"In order to advance our understanding of improving cardiovascular health, we believe that continued research between the intersection of mental health and cardiovascular disease should be a priority," said senior author Christopher O'Connor, M.D., director of the Duke Heart Center and chief of the Division of Cardiology.

To better understand how to ease the negative cardiovascular effects brought on by mental stress, Duke researchers led the Responses of Mental Stress Induced Myocardial Ischemia to Escitalopram Treatment (REMIT) study, a randomized, double blind, placebo controlled clinical trial. They enrolled participants with existing [coronary heart disease](#) that was in stable condition.

In order to find people experiencing MSIMI, the researchers subjected participants to a common exercise stress test using a treadmill, as well as three mental stress tests: a tricky mental math task, tracing a diagram of a star while looking at hand movement as a reflection in a mirror, and telling a story about a situation that evoked anger or sadness. Echocardiography and electrocardiography testing and blood pressure and heart rate measurements were used to assess heart function during the stress tests.

Of the 310 participants who were tested, 127 developed MSIMI and were randomized to either receive escitalopram – a selective serotonin reuptake inhibitor (SSRI) used to treat depression and anxiety – or

placebo. A total of 112 participants completed the full study and final assessments.

At the end of the six-week study, the participants underwent the same stress tests and their cardiovascular function was compared to what was measured before taking the medication or the placebo. The researchers observed that those who took escitalopram were 2.62 times less likely to experience MSIMI during the three mental stress tasks compared with those taking placebo.

During the final mental stress tasks, participants in the escitalopram group felt significantly more in control and calmer than those in the placebo group. Taking escitalopram was also associated with several positive changes in cardiovascular markers, including reducing the number of platelet serotonin receptor transporters.

"Our findings support the hypothesis that short-term use of SSRIs improves levels of biomarkers associated with adverse cardiovascular outcomes," said Jiang.

The study suggests that SSRIs or similar treatments could play an important role in managing coronary heart disease, a finding relevant for physicians and patients at risk for or living with coronary heart disease.

"All physicians treating patients with coronary artery disease need to be aware of how emotional stressors may negatively impact their disease management," said study author Eric Velazquez, M.D., associate professor of cardiology at Duke. "We should be having conversations with our patients about their lifestyles to gauge their levels of [mental stress](#) and whether the coping mechanisms they use are adequate or if more mental health-focused help is needed."

Additional research is warranted to fully understand the mechanisms

behind MSIMI and whether improvements in the condition from taking escitalopram may result in reducing occurrence or recurrence of serious health conditions, including heart attack or angina, stroke, [heart](#) failure, or death. A study is also necessary to determine how long escitalopram should be taken, and whether the participants already achieved the maximum benefit at six weeks.

More information: *JAMA*. 2013;309(20):2139-2149

Provided by Duke University Medical Center

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