News

Anxiety and Depression May Be Linked to Cardiovascular Disease via Stress

According to a recent study, patients with anxiety or depression who wish to reduce their risk of myocardial infarction or stroke may find it beneficial to lower their blood pressure, cholesterol, and stress levels.

According to first author Shady Abohashem, MD, MPH, of the Cardiovascular Imaging Research Center at Massachusetts General Hospital and the Mass General Brigham Heart and Vascular Institute, it has long been known that those who suffer from anxiety or depression are more likely to have heart attacks or strokes than those who do not.

However, the relationship between mental illness and major adverse cardiovascular events (MACE) has been controversial because of questions about whether earlier studies took into account all potential confounders, as he and his coauthors note in their study, published in Circulation: Cardiovascular Imaging.

The head of his center's cardiac imaging studies, Abohashem, and his colleagues looked into a potential physiological reason for the connection between anxiety, depression, and cardiovascular events like heart attacks, heart failures, or strokes.

Data from around 86,000 participants in the Mass General Brigham Biobank was examined by the researchers. Fifteen thousand people had been diagnosed with anxiety and depression, sixteen thousand with one or the other, and fifty-five thousand without a diagnosis.

A median follow-up of almost three years revealed that about 3000 patients had MACE. When traditional cardiovascular disease risk factors, lifestyle and socioeconomic factors, and antidepressant use were taken into account, the associations between having a cardiovascular event and having a diagnosis of depression or anxiety remained statistically significant.

In a model that controlled for risk variables for cardiovascular disease, those with a diagnosis of both depression and anxiety had a roughly 32% higher relative risk of a major cardiovascular event than those with a diagnosis of either one of the mental health problems.

Stress on the Heart and Brain

The researchers also evaluated stress-related immunological and autonomic processes as well as brain activity in a subset of subjects. They discovered that on brain imaging, individuals with a diagnosis of depression displayed elevated amygdala-to-cortex activity, a marker of stress-related neural activity. Additionally, their blood levels of C-reactive protein (CRP), a marker of elevated autonomic activity and systemic inflammation, were higher and their heart rate variability was lower. All three had an indirect impact on the association between MACE and depression, anxiety, or a combination of the two, according to a mediation study.

Abohashem pointed out that because the study was observational, it was unable to establish a causal association. "These changes seem to form a biological chain linking emotional stress to cardiovascular risk," he stated in a press statement. Overactive stress circuits in the brain can repeatedly set off the body's "fight or flight" response, which raises blood pressure, heart rate, and causes chronic inflammation. These alterations have the potential to hasten heart disease and harm blood vessels over time.

In 2024, Abohashem coauthored a study using the same cohort that suggested anxiety or depression speeds up the development of cardiovascular risk factors, such as type 2 diabetes, hypertension, and hyperlipidemia, particularly in young women.

Abohashem said that even people who are not diagnosed with anxiety or depression may endure enough ongoing stress to increase autonomic activity and systemic inflammation, which will ultimately have a negative impact on the heart.

Cardiologists don't frequently inquire about their patients' mental health or stress levels, he said, despite mounting data linking depression and anxiety to an increased risk of MACE.

"The cardiologists adhere to the rules. "Unfortunately, the guidelines do not adequately address mental health at this time," Abohashem stated. Furthermore, he stated that some patients are still hesitant to disclose to their cardiologist that they have received a mental health diagnosis.

Nonetheless, the American College of Cardiology stated in a September Scientific Statement on Inflammation and Cardiovascular Disease that inflammation is still "strongly predictive" of recurrent MACE and suggested high-sensitivity CRP screening be made universally for primary and secondary prevention "because clinicians will not treat what they do not measure."

"Most likely some causality"
While praising Abohashem's team and describing their research as cutting edge, Glenn Levine, MD, a professor of medicine-cardiology at the Baylor College of Medicine, questioned if cardiologists have the time to talk to every patient about stress and mental health.

Levine, the primary author of a recent American Heart Association Scientific Statement on post-heart attack psychological suffering, described the connection between stress and MACE as "seemingly real." "It most likely has some causality."

However, "the risk is probably not of the magnitude of the more standard risks, like smoking, blood pressure, and diabetes," he stated. Levine noted that whereas established risk factors double the risk, chronic stress raises the chance of MACE by almost 50%, according to the best estimations.

He added that cardiologists already have a lot on their plate, so it's hard to fit in a talk on stress. Levine clarified, "This is kind of newish type stuff." "There are times when you're more interested in their outside records and cardiology studies."

Nevertheless, Abohashem stated that he and his colleagues believe their study will inspire patients to manage their ongoing stress by adopting healthy lifestyle choices like getting more exercise and a good night's sleep. "Also, think of it as a heart health priority."