Mental stress puts the squeeze on women’s blood vessels

By AMERICAN HEART ASSOCIATION NEWS

'Tis the season for last-minute holiday shopping to generate anxiety – over whether presents will arrive on time and how much money is being spent – and the headaches over guests and travel.

But a new study hints that people with heart disease, particularly women, should shake off that psychological stress.

Women are generally more likely than men to develop what’s known as myocardial ischemia – or an abnormal restriction of blood supply to the heart muscle – after carrying out mentally stressful tasks, according to past studies.

But researchers now have found differences between men and women when examining the reason behind that reduced blood flow, according to a study published Thursday in Arteriosclerosis, Thrombosis and Vascular Biology.

“We wanted to go a step further and try to understand the potential mechanisms for why women have this vulnerability to developing ischemia with mental stress,” said Viola Vaccarino, M.D., Ph.D., the study’s senior author.

Vaccarino said the new findings are important because previous studies have shown that a reduction in blood supply to the heart during mental stress doubles the risk of heart attack or death from heart disease.

The new study looked at 678 people with heart disease who were asked to deliver a speech before an unfamiliar audience. The subjects had their blood pressure and heart rates
measured. They also underwent heart scans before and after their speech and had the constriction of tiny arteries supplying blood in their fingers measured to observe how much the arteries tightened during the process.

Researchers found that mental stress caused a reduction of blood flow in both men and women but for different reasons. Among women, the ischemia was related to the constriction of tiny peripheral blood vessels, forcing the heart to pump against increased resistance. In men, the reduced blood flow was mainly because of a surge in blood pressure and heart rate, which prompted the heart to work harder.

“The healthy response in this circumstance would have been for the small vessels to actually dilate so that more blood would flow to the tissues,” said Vaccarino, a professor of epidemiology and medicine at Emory University and chair of the epidemiology department at the university’s Rollins School of Public Health.

Mental stress by itself is not a bad thing because it often encourages higher achievement, “but at the same time, if we’re stressed out, we need to learn ways to cope better and that’s what our society fails to emphasize enough,” said Wei Jiang, M.D., a professor of medicine and psychiatry at Duke University Medical Center, who was not involved in the new study.

“As women, we need to learn to recognize when we are stressed out. Even when they feel stressed, women often don’t accept it, in part, because this is how we tend to be brought up,” said Jiang, author of a 2014 study that found different cardiovascular and psychological reactions to mental stress among men and women with heart disease.

Her top advice to stressed-out women, particularly those with a history of heart problems? Pay attention to your body, including your mind, and make sure to give yourself breaks – particularly during times like the current holiday season.

“Women feel like the holiday time is our responsibility. We feel like we have to make sure everyone is happy, that all the food is on the table. We think, if we only get a couple of hours of sleep it’s no big deal. But the thing is, we really don’t know how well our body will handle this kind of stress,” Jiang said. “A lot of times, we’ll make it through the holiday time, only to get very sick once it is over.”

Both Jiang and Vaccarino encourage women and men alike to incorporate regular exercise into their schedules to help relieve mental stress. They also recommend employing relaxation or mindfulness techniques.

Both she and Vaccarino emphasized the importance of continuing research in the area, as well as conducting additional studies on women with heart disease to determine any direct links between mentally stressful tasks and future cardiac events.

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