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Study Suggests Women with Difficult to Diagnose Chest Pain Symptoms are at Elevated Risk for Future Cardiovascular Events

First prospective study to examine implications of chest pain in the absence of coronary artery disease

LOS ANGELES – May 11, 2009 – Many physicians are presented with the following scenario: a woman comes into the office complaining of chest pain, undergoes a stress test to evaluate the chest pain, and the stress test results suggest coronary artery disease, a condition in which plaque builds up inside the coronary arteries. She is then referred for an angiogram to look at the coronary arteries and despite her symptoms and the abnormal stress test, she is told that the tests didn't find anything of clinical significance and is sent home without treatment. However, a new study may change this by offering greater insight into the causes behind chest pain in women and how it manifests differently in women than it does in men. The study, published in the May 11 Archives of Internal Medicine, shows that women with chest pain but without coronary artery disease are at an elevated risk for cardiovascular events such as heart attack or stroke.

"These results combined with prior work suggest that women are not just smaller versions of men when it comes to heart disease," said C. Noel Bairey Merz, MD, director of the Women's Heart Center at the Cedars-Sinai Heart Institute and the chair of the Women's Ischemia Syndrome Evaluation (WISE). Sponsored by the National Heart Lung and Blood Institute, the WISE studies began in 1997 and have pointed out how differently men and women experience symptoms of coronary heart disease. "Women and men experience heart disease differently and require different treatments," added Bairey Merz.

"Our findings challenge the accepted belief in the medical community that these patients should be considered low-risk, and points towards the need for a different treatment regimen for these patients moving forward," said Martha Gulati, MD, first author of the study, cardiologist and associate director of the Center for Women's Cardiovascular Health at Northwestern Memorial's Bluhm Cardiovascular Institute.

The study analyzed data from two previous studies, the WISE study and the St. James Women Take Heart project, to complete the review. The WISE study examined symptomatic women referred for coronary angiography, or an X-ray examination of the blood vessels or chambers of the heart, and followed them for about five years. The Women Take Heart project enrolled asymptomatic, community-based women with no history of heart disease who were followed for up to 10 years. The prospective study compares cardiovascular events such as heart attack, stroke and hospitalization for heart failure, in 540 WISE study participants with suspected ischemia, or chest pain, but no evidence from medical tests, with those from a group of 1,000 age and race-matched Women Take Heart women.

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Compared with the WISE women, the Women Take Heart women had a lower prevalence of obesity, family history of coronary artery disease, hypertension and diabetes. Results showed that over the course of five years, the WISE women had more cardiac events than the Women Take Heart women. The women who experienced the most frequent cardiovascular events were those with four or more cardiac risk factors.

The physicians hypothesize that this difficult to diagnose chest pain could be caused by microvascular angina and endothelial dysfunction, affecting blood vessels in which the layers of the cells are not functioning properly and may be undetectable by standard testing. Researchers believe endothelial dysfunction to be the earliest stage of coronary artery disease.

The study authors recommend that women with chest pain symptoms undergo initial testing for coronary artery disease. If there is no evidence of coronary artery disease, patients should undergo further assessment for endothelial dysfunction. If detected, patients should then undergo treatment to improve the dysfunction. Women with symptoms, but no presence of endothelial dysfunction, should work with physicians to aggressively modify certain risk factors for heart disease, such as smoking, weight control and cholesterol.

"We are encouraged by our results as we hope it will lead to more effective treatment for women, and feel that future investigations are needed to better understand the progression of heart disease in women," said Gulati.

About the Cedars-Sinai Heart Institute

The Cedars-Sinai Heart Institute is internationally recognized for outstanding heart care built on decades of innovation and leading-edge research. From cardiac imaging and advanced diagnostics to surgical repair of complex heart problems to the training of the heart specialists of tomorrow and research that is deepening medical knowledge and practice, the Cedars-Sinai Heart Institute is known around the world for excellence and innovations.

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