Doctors evaluating heart problems should consider checking fat deposits around the heart

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Cardiac imaging researchers at Cedars-Sinai Heart Institute are recommending that physicians not overlook fatty deposits around the heart when evaluating patients for risk of major heart problems.

Although abdominal fat is often considered in making these assessments, recent research suggests that measuring fatty tissue around the heart is an even better predictor, and noninvasive CT scanning may provide this important information.

The recommendation appeared in an editorial comment published in the *Journal of the American College of Cardiology: Cardiovascular Imaging*. Daniel S. Berman, M.D., chief of cardiac imaging at the Cedars-Sinai Heart Institute and Cedars-Sinai's S. Mark Taper Foundation Imaging Center, is the article's first author and a leading authority on cardiac imaging.

The published opinion was prompted by another article in the journal in which researchers provide new evidence linking abdominal fat to instability of coronary arterial plaques. In current theory, people with excess abdominal fat are at higher risk of plaque buildup and heart disease, and plaque that is vulnerable to rupture poses a greater threat than that which is stable.

With co-authors Victor Y. Cheng, M.D., and Damini Dey, Ph.D.,

Berman cites various studies that link fat around the heart and coronary arteries to inflammation and plaque development and suggests that fat around the heart and coronary arteries "may be more potent determinants of coronary plaque development and progression than visceral abdominal fat." This fat around the heart also has been implicated in the development of major adverse cardiac events (MACE), defined as cardiac-related death, nonfatal heart attack, surgery to bypass blocked heart arteries, or repeated percutaneous coronary intervention (angioplasty) to reopen blocked arteries.

Under Berman's direction, Cedars-Sinai recently completed the largest randomized trial of coronary artery calcium CT scanning, following 2,137 subjects over four years. More than 20,000 patients are now enrolled in an ongoing data registry. This technology identifies plaque deposits in heart arteries by detecting bits of calcium, one of the components of plaque. Additionally, by using software methods, coronary artery calcium CT scanning can also be used to measure fat around the heart and coronary arteries. The two measurements considered together – plaque and increased fat around the heart – appear to improve the prediction of patient risk for major heart problems.

In their studies on coronary artery calcium CT scanning, researchers at Cedars-Sinai and at other sites found that patients who had no symptoms of heart disease but experienced a major adverse cardiac event had more fat around the heart than did control subjects who had no events. When they included a measurement of fat volume around the heart with conventional risk factors and coronary calcium scans, they were better able to predict which patients were more likely to experience major heart problems. In another study, researchers found that the amount of fat around the heart was strongly associated with the narrowing of coronary arteries caused by plaque.

"Measurement of pericardial fat from cardiac CT appears primed to

ultimately become a routine complement to the information gained from plaque evaluation," the researchers conclude. "This assessment could generate CT information regarding the activity of the atherosclerotic (plaque buildup) process, potentially adding meaningfully to clinical risk assessment."

Provided by Cedars-Sinai Medical Center