MedicalXpress

New blood test could detect heart disease in people with no symptoms

December 7 2010

A more sensitive version of a blood test typically used to confirm that someone is having a heart attack could indicate whether a seemingly healthy, middle-aged person has unrecognized heart disease and an increased risk of dying, UT Southwestern Medical Center researchers have found.

In a study available online and in the Dec. 8 print issue of the *Journal of the American Medical Association*, researchers found that a new, highly sensitive test for a protein called cardiac troponin T (cTnT) could detect the protein in about 25 percent of blood samples supplied by more than 3,500 individuals. The study also found that people with detectable levels of troponin T were nearly seven times more likely to die within six years from heart disease.

"This test is among the most powerful predictors of death in the general population we've seen so far," said Dr. James de Lemos, associate professor of internal medicine at UT Southwestern and lead author of the study. "It appears that the higher your troponin T, the more likely you are to have problems with your heart, and the worse you're going to do, regardless of your other risk factors."

Although previous work has shown an association between cTnT levels and heart disease, standard tests for the protein can detect cTnT in only a very small percentage of the population, limiting the test's utility for assessing risk in people with no symptoms of heart disease.

The more sensitive test, however, can detect circulating cTnT levels in almost everyone with chronic heart failure and chronic coronary artery disease.

"Because this test seems to identify cardiovascular problems that were previously unrecognized, we hope in the future to be able to use it to prevent some death and disability from heart failure and other cardiac diseases," Dr. de Lemos said.

Emergency room doctors commonly use the standard, less sensitive test for cTnT to determine whether a patient experiencing chest pains is having a heart attack. Dr. de Lemos said the ability to detect lower levels of the protein could make emergency room physicians rethink the interpretation of the cTnT level.

"With the new highly sensitive assays, it's going to be much more difficult to determine if elevated levels of troponin T are due to a heart attack or rather another chronic form of disease," he said.

The current work with cTnT built on previous findings by Dr. de Lemos from the Dallas Heart Study, a groundbreaking investigation of cardiovascular disease that first involved more than 6,100 Dallas County residents. As part of that study, researchers found that cTnT could be detected with the standard technology in 1 percent of the population.

To determine if newer, more sensitive technology could detect cTnT at lower levels, researchers used the same population of residents. Starting in the year 2000, more than 3,500 participants provided blood samples and underwent multiple body scans with magnetic resonance imaging and computed tomography to examine the heart and other organs. Researchers then tracked the cause and time of death of participants, ages 30 to 65, through 2007.

"This study was designed to be representative of urban communities throughout the United States where there is a high prevalence of obesity, untreated hypertension and diabetes – just as there is in Dallas," Dr. de Lemos said.

Older adults, males, African-Americans and individuals with abnormal thickening or weakness of the heart muscles had the highest levels of cTnT.

The outcomes were validated in a companion paper published in the same print issue of *JAMA*. The second study, co-authored by Dr. de Lemos and led by Dr. Christopher deFilippi of the University of Maryland School of Medicine, also used the highly sensitive test, but only in participants older than 65. That study found that in addition to death, cTnT was associated with heart failure, and that the risk of both outcomes shifted in concordance with change in cardiac troponin T levels over time.

More information: *JAMA*. 2010;304[22]:2503-2512.

Provided by UT Southwestern Medical Center