

DNA particles in the blood may help speed detection of coronary artery disease

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DNA fragments in your blood may someday help doctors quickly learn if chest pain means you have narrowed heart arteries, according to a new study published in the American Heart Association journal *Arteriosclerosis, Thrombosis, and Vascular Biology*.

The study involved 282 patients, ages 34 to 83, who reported chest pain and were suspected of having [coronary artery disease](#). Researchers used computed tomography imaging to look for hardened, or calcified, buildup in the blood vessels that supply the heart. Blood samples also were tested for bits of genetic material. Release of small DNA particles in the blood occurs during [chronic inflammatory conditions](#) such as coronary artery disease.

Higher levels of DNA particles in the blood were linked to high levels of [coronary artery calcium](#) deposits. These particles are potentially markers of disease, and may eventually help identify patients with severely narrowed coronary arteries, predict how many coronary vessels were affected, and even whether a patient is likely to suffer a serious heart problem or heart-related death.

"If those markers are proven to be effective—specific and sensitive—they may improve medical care in terms of identifying patients at risk sooner," said Julian Borissoff, M.D., Ph.D., lead author of the study and postdoctoral research fellow at Boston Children's Hospital and Harvard Medical School. "And so the patients may go on treatment sooner."

The scientists noted that larger studies, following more patients for longer periods, are needed to see how precisely these markers might identify patients at risk for developing coronary artery disease. Almost half of the patients studied were followed for a year and a half or longer.

If the markers do pan out, they have the potential to help doctors efficiently pinpoint which patients with chest pain are likely to have [coronary artery](#) disease rather than some other problem causing the discomfort, Borissoff said. Currently, a time-consuming and costly battery of tests is used to determine whether the heart is at risk, he said.

It is plausible to think that the DNA particles themselves might contribute to the progression of atherosclerosis and the risk of dangerous blood vessel blockages, the study's authors wrote. "The more the ongoing cell death, which is normal with inflammation, the more DNA enters the circulation and more plaque builds up," Borissoff said. "Cells get damaged, and the products released from the damaged cells can cause even more damage and inflammatory responses."

The researchers are testing the DNA particle components further, he said, to see which ones are most sensitive and to understand more about how their levels might vary—for instance, during different stages of progression of atherosclerosis, or during a treadmill test, or after treatment for a heart attack.

Provided by American Heart Association

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