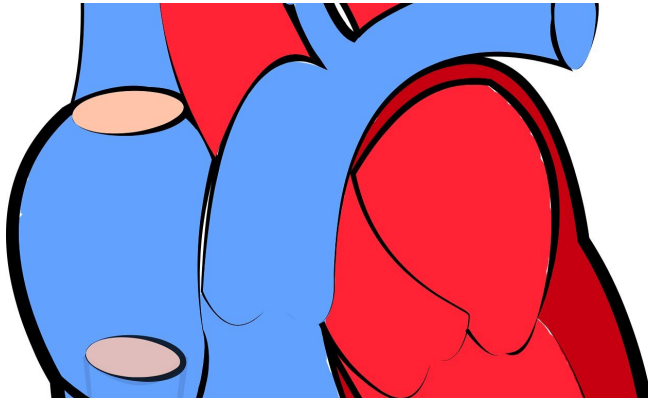


New blood markers may reveal heart attack in chest pain patients

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A patient arrives at hospital with chest pain. Doctors suspect heart attack and rapid diagnosis is important, but the tests to confirm it can be invasive and it could easily be something else. Could a simple blood test help to non-invasively rule heart attack in or out? A new study in open access journal *Frontiers in Cardiovascular Medicine* certainly suggests so. The study identified telltale markers in the blood of heart attack patients that distinguished them from patients suffering chest pain with other causes. The researchers hope that the results will lead to new diagnostic tests for heart attacks.

If you have ever suffered [chest pain](#), the possibility of a heart attack may have popped into your head. While chest [pain](#) is an important symptom for heart attacks, there are a variety of other conditions that can cause similar symptoms, and many of them are not serious. If a patient presents with chest pain at hospital, doctors need to quickly determine if a heart attack is the culprit. Early treatment is important in limiting the damage that occurs.

At present, this may involve [coronary angiography](#), where a catheter is placed into the blood vessels

of the heart. While effective, angiography is invasive, and not something you would like to undergo if unnecessary. In addition, in busy or poorly resourced hospitals, angiography may not always be available in time. Another test involves taking a [blood sample](#) to check for proteins that indicate damage to the heart muscle. However, these markers are sometimes unreliable, and can be elevated by other conditions.

These issues inspired these researchers to look for new markers in the blood that form a unique fingerprint for a heart attack. They turned to [small molecules](#) called metabolites that are produced during biochemical processes within our bodies.

"We analyzed circulating metabolites in blood plasma samples from cardiac chest pain patients, including heart attack cases and other cardiac chest pain cases, to identify potential markers for heart attack diagnosis and early warning," explained Dr. Xiangqing Kong of the First Affiliated Hospital of Nanjing Medical University, corresponding author on the paper. "Such markers could be helpful in confirming heart attack in a timely manner when angiography is unavailable."

The researchers collected [blood](#) samples from 146 patients who presented at hospital with chest pain and 84 healthy volunteers. Of the 146 chest pain patients, 85 were later confirmed to have suffered a heart attack and the remainder had chest pain from other causes.

Strikingly, on analyzing the samples, the researchers found an array of metabolites that were present in different amounts, and the differences were significant enough that they could successfully distinguish between the samples from heart attack patients, those with non-heart attack-related [chest](#) pain and the healthy volunteers. Three metabolites showed particular promise as diagnostic markers.

"Even after accounting for other cardiac risk factors such as hypertension, smoking and diabetes history, the metabolites deoxyuridine, homoserine and methionine scored highly as potential diagnostic and risk markers of heart attack," explained Dr. Jiye Aa of the China Pharmaceutical University, another author on the paper.

In reality, a suspected heart attack patient will likely undergo various tests before a [heart attack](#) is confirmed, but expanding the available arsenal of reliable tests will be useful for doctors in narrowing things down quickly. The researchers plan to conduct further research to assess why and how these biomarkers are involved in [heart](#) attacks.

More information: Plasma metabolites alert patients with chest pain to occurrence of myocardial infarction, *Frontiers in Cardiovascular Medicine*, DOI: [10.3389/fcvm.2021.652746](https://doi.org/10.3389/fcvm.2021.652746) , www.frontiersin.org/articles/10.3389/fcvm.2021.652746/abstract

Provided by Frontiers

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