Study reveals how COVID damages the heart
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University of Queensland researchers have discovered how COVID-19 damages the heart, opening the door to future treatments.

This initial study—featuring a small cohort—found COVID-19 damaged the DNA in cardiac tissue, which wasn't detected in influenza samples.

UQ Diamantina Institute researcher Dr. Arutha Kulasinghe said the team found while COVID-19 and influenza are both severe respiratory viruses, they appeared to affect cardiac tissue very differently.

"In comparison to the 2009 flu pandemic, COVID has led to more severe and long-term cardiovascular disease but what was causing that at a molecular level wasn't known," Dr. Kulasinghe said.

"During our study, we couldn't detect viral particles in the cardiac tissues of COVID-19 patients, but what we found was tissue changes associated with DNA damage and repair.

"DNA damage and repair mechanisms foster genomic instability and are related to chronic diseases such as diabetes, cancer, atherosclerosis and neurodegenerative disorders, so understanding why this is happening in COVID-19 patients is important."

Data associated with the impact of COVID on the heart has previously been limited to blood biomarkers and physiological measurement, as obtaining heart biopsy samples is invasive.

This study was able to get deeper insights using actual cardiac tissues collected during autopsies from seven COVID patients from Brazil, two people who died from influenza and six control patients.

UQ's Professor John Fraser, who established the international COVID-19 Critical Care Consortium, said the findings provided insights into how COVID-19 impacted the body compared to other respiratory viruses.

"When we looked at the influenza cardiac tissue samples, we identified that it caused excess inflammation," Professor Fraser said. "Whereas we found COVID-19 attacked the heart's DNA—probably directly and not just as a knock-on from inflammation."
"Our study has highlighted that the two viruses appear to affect cardiac tissue very differently, which we want to get a better understand of in larger cohort studies.

"What we have categorically shown is that COVID is not 'just like the flu.' This study helps us understand how COVID-19 affects that heart, and that is the first step in working out what treatments might be best to repair that heart."


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Provided by University of Queensland


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