Does COVID really affect your heart?

May 26 2021, by Tim Chico

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Reading a recent article with the headline Setting the Record straight: there is no "COVID heart" teleported me back to 2020. It wasn't a comfortable trip.

In January 2020, I had a bit of a chat about a virus in Wuhan with my

local director of public health. By late February, I was spending hours each night doomscrolling Twitter, seeing the disaster in northern Italy unfold.

Cardiologists like me were dealing with an avalanche of COVID. Multiple tweets suggested many COVID patients suffered cardiac complications. Stories of patients who seemed to be having heart attacks only to infect the staff treating them were very common, as were reports of people with heart failure caused by coronavirus infection of the heart muscle.

> Seeing a lot of CV complications of #COVID19 in real-time with myocarditis, ventricular arrhythmias and more. Hard to know what the role of MCS should be. @hfcollaboratory @laurenranard @scottdsolomon @NYPCUCVI
> A Heart Attack? No, It Was the Coronavirus
> https://t.co/DMb9KMgNLU
>
> — Silia DeFilippis, MD (@ersied727) March 27, 2020

It was all pretty convincing and not even that surprising. Even pre-COVID, every week my hospital admits people with heart issues put down to viral infections—although often without much definite evidence. Usually these are mild. There's a high chance you've had a scratchy chest pain during a bad cold that was probably a viral inflammation of the outer lining of the heart—a condition known as pericarditis.

But sometimes, for reasons we don't understand, viral infections can cause very serious heart problems, mimicking a heart attack, causing rhythm issues, or even fatal heart failure. So a virus like SARS-CoV-2 that attaches to the lining of blood vessels might plausibly cause cardiac complications.

Surfeit of studies

Like many university-based doctors, I went full-time NHS and got ready to face COVID. My colleagues and I started to read everything we could find about COVID's effect on the heart. At the same time, we began to see the virus first hand. A journal asked us to review the emerging data. It seemed like a good idea at the time.

By May 2020, there were several published "case reports" (descriptions of single cases) of COVID patients with a huge range of cardiac complications, and already multiple reviews citing dozens of papers (all published in 2020) describing potential complications and causes of COVID heart. The word "potential" is easily overlooked, but is critical.

By the time we submitted our manuscript in May 2020, a search for "COVID" and "cardiovascular" on PubMed—a website for searching medical and life sciences journal articles—found 653 publications. Our hospital had treated 1,450 COVID patients. Many of them were very ill with terrible lung problems—many died. Although the heart must fail at the end of life, we weren't seeing the avalanche of direct cardiac complications we expected.

By the time we were invited to submit a revised manuscript in July, there were 3,055 publications from the PubMed search, many of which continued to raise significant concerns about high rates of direct cardiac complications with COVID. This included the studies now questioned in the article mentioned above. But also, several high-profile papers had been retracted or revised to correct errors made in the understandably frantic haste to publish.

We found a number of errors. For example, a case series including someone who was on intensive care for a pericardial operation and then contracted the sister virus that causes Mers (Mers-CoV) was erroneously

cited several times as evidence of the cardiac complications that can be caused by this family of viruses.

By the time we resubmitted our final manuscript in September 2020, I was already concerned we were adding to the problem writing yet another paper when there were already too many to read. We subtitled our review "many publications, multiple uncertainties."

Although we included reports of complications we had encountered, especially blood clots related to COVID, we concluded "our fears of a large number of severe cardiac complications of COVID have so far not materialized." It's been cited exactly zero times. That PubMed search now finds 6,810 publications, ours among them.

Occam's razor

At medical school, I was taught about "Occam's razor"—the idea that the most economical explanation is usually the right one. In medicine, this is often interpreted as an instruction to look for a single cause in someone with multiple issues. But this only works on TV shows like House, in which the preternaturally gifted Dr. House usually discovers the obscure, singular cause of his patient's multiple symptoms.

Patients more often have two or even three common diseases simultaneously than a rare problem that causes all the same issues. But when a coincidence is "interesting" it is far more likely to end up as a case report. Hence the correlations between heart problems and COVID that appeared in the literature.

So there's no COVID heart? Actually, I think there is, but severe forms of it are not as common as I expected and difficult to tell from the indirect effects of severe illness due to any cause: COVID, cancer or car crash.

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