

# Could tiny blood clots make COVID-19 more lethal?

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(HealthDay)—The COVID-19 coronavirus appears to promote blood

clotting throughout the body, which might help explain why the germ is so much more deadly than other members of its viral family, experts say.

Some people severely ill with COVID-19 develop [blood](#) clots in their lungs and other major organs, doctors have observed.

Doctors suspect these small [blood clots](#) are one reason why COVID-19 patients struggle for breath, said Dr. Hooman Poor, a pulmonary and critical care doctor with Mount Sinai Beth Israel in New York City.

"We see not just the possibility of blood clots in the lungs," Poor said. In COVID-19 patients who require dialysis because of kidney failure, "their catheters are clotting off every second."

These tiny blood clots could also be responsible for one of the unique symptoms of COVID-19: a sudden loss of smell, said Dr. Jeanne Marrazzo, a professor of infectious diseases with the University of Alabama at Birmingham. It also might explain why patients who seem to be doing well suddenly crash.

Clotting associated with COVID-19 is so pronounced that "some people are beginning to say, 'Look, anybody that comes to the hospital needs to be put on'" [blood thinners](#) at the start of their treatment, said Dr. Carlos del Rio, a professor of infectious diseases at Emory University in Atlanta.

Poor recently treated five critically ill COVID-19 patients with tPA, a [clot](#)-busting drug normally used on [stroke patients](#), according to a new preliminary case report from the Icahn School of Medicine at Mount Sinai.

The five patients had respiratory failure early in their disease, along with blood oxygen levels and clot-related protein markers that indicated that

[lung](#) blood clots could be robbing them of breath, Poor and his colleagues noted.

"The first patient I gave it to had a dramatic, immediate response, indicating that blood clots were definitely playing a role in why she was so sick at that time," Poor said.

All five showed immediate improvements in their [blood oxygen levels](#), but ultimately they did not have good outcomes, Poor said.

However, he believes more research is needed before regularly treating COVID-19 patients with either blood-thinning or clot-busting drugs.

"These are both very dangerous medicines," Poor said. "It would be a shame to administer these medicines inappropriately and then have a bad outcome, like a catastrophic bleed."

Poor and his colleagues suspected that blood clots might be contributing to people's acute respiratory distress syndrome (ARDS) because the lungs of COVID-19 patients do not develop the kind of stiffness usually seen in other viruses that hamper breathing.

"When you have these abnormalities in oxygen and [carbon dioxide](#) with lungs that are not particularly stiff, the first thing that jumps to mind is there's something wrong with the blood vessels of the lungs," Poor said.

Others have also observed clots with COVID-19. Dutch researchers found that about a third of 184 patients in intensive care with coronavirus had a complication associated with a clot—in the lungs or the legs, or even as severe as a clot-caused stroke or heart attack, according to their report in the April 10 *Thrombosis Research*.

Lung blood clots usually occur because a large blood clot in the leg—a

deep vein thrombosis—breaks free and travels up into the lungs, Marrazzo said.

But it's not unusual for viruses to promote blood clots, del Rio said. For example, HIV can promote clotting in patients.

Why the new coronavirus might promote blood clotting is still up for debate.

Poor and Marrazzo speculated that the virus somehow damages human cells in a way that promotes clotting. Poor noted that COVID-19 patients have elevated levels of D-dimer, a small protein fragment produced by blood clots.

Another recent study in the journal *Physiological Reviews* noted that people with already high levels of plasmin, a key enzyme that breaks down blood clots, tend to have more severe COVID-19 infection.

Plasmin appears to help the novel [coronavirus](#) more readily bind with human cells, said lead researcher Dr. Hong-Long Ji, a professor of cellular and molecular biology at the University of Texas Health Science Center at Tyler.

If this is true, then using clot-busting drugs to treat COVID-19 might backfire by enhancing the patients' infection, Ji said.

"If you give the patient plasmin or other kinds of proteins to remove the clots, then the problem is this patient still has a virus in their body and they also have a problem with bleeding in every kind of important organ," Ji said.

**More information:** The U.S. Centers for Disease Control and Prevention has more about [COVID-19](#).

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