

Houston pathologists hoping autopsy research will help unlock new COVID-19 treatments

HOUSTON – Pathologists in the Texas Medical Center are at the forefront of trying to unlock new treatments for COVID-19 patients by studying how people die from the virus. Some of this **research** has already been published by doctors at UT Health’s McGovern Medical School.

“When the virus hit the United States I think it’s fair to say there was a fair amount of essentially panic,” said Dr. L. Maximilian Buja, professor of pathology and laboratory medicine UT Health’s McGovern Medical School.

Buja said a large part of the panic came from a lack of treatments for this virus.

“It’s really a systemic disease involving multiple organs in the body,” said Buja.

Buja and his colleagues are leading an effort to pool the knowledge gained from autopsies on those who’ve died from COVID-19. Harris County Deputy Chief Medical Examiner Dwayne Wolf is contributing to this work. Both experts said the impact of the virus on the lungs can be devastating.

“The blood vessels in the lungs become leaky and you start getting proteins leaking out of the bloodstream into the air sac,” said Wolf.

Buja adds this can have an impact on whether a COVID-19 patient should be placed on a ventilator.

“In a healthy lung you want to blow off carbon-dioxide and take in oxygen and that gas exchange is being severely impaired,” said Buja.

Buja said the virus also goes beyond the lungs.

“They’re showing markers in the blood of heart-muscle cell damage,” said Buja.

Buja and Wolf said the virus can also cause blood clots in the lungs and legs, as well as prompt a person's immune system to go into hyper-drive. The virus can prompt some people to produce too much of an immune system protein called cytokine. This prompts what's known as a "cytokine storm," where the body starts attacking itself.

"All contributing to a systemic illness, which basically overwhelms the body in some people," said Buja.

Buja says this research will hopefully guide doctors to develop comprehensive treatments faster, to help mitigate these complications.

"Our work suggest(s) really having to get on top of trying to prevent this thrombotic process," said Buja. "There are some medications that can try to control and regulate the inflammatory process."

Wolf said studying these type of complications help better explain why those with underlying health problems are hit hardest. In fact, he said the first autopsy he did was on a COVID-19 victim with no known health problems.

"The person had underlying heart disease that was never diagnosed. He had, as it turns out, diabetes that was never diagnosed," said Wolf.

Buja said this type of research is only now gaining momentum. Buja said in the early days of the pandemic conflicting guidance from the federal government slowed the work of performing on autopsies on COVID-19 victims.

"The first paragraph said don't do autopsies, it's not safe. The second paragraph said if you're going to do them be careful," Buja said was an initial directive from OSHA. "Administrators were already scared and with that, half the autopsy units in the United States were shut down."

Following that directive, Buja said the Centers for Disease Control and Prevention came out with a lengthy list of safety precautions pathologists needed to take before performing an autopsy on a COVID-19 patient. Buja said some of those precautions included making sure a facility had negative pressure.

"That was well-meaning but we had to stop what we were doing and make sure those facilities met those standards," said Buja.

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