After 300 days, patient with a weakened immune system clears COVID-19

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Dahlene Fusco, MD, PhD, is one of the Tulane researchers who helped a patient clear the COVID-19 virus after 10 months.

It took multidisciplinary experts in virology, immunology and pharmacy at Tulane University School of Medicine to help a cancer patient clear the COVID-19 virus from his immune system. The patient tested positive for COVID-19 for nearly 300 days and spent most of that time in isolation at a local hospital. The treatment that patient received is now described in a case report on B-cell depletion associated prolonged COVID (or B-DEAP COVID) published in *Viruses.*

The patient, a man with follicular lymphoma, originally tested positive for COVID-19 early in the pandemic. He enrolled in an observational study led by Dahlene Fusco, MD, PhD, an infectious diseases physician and Arnaud Drouin, MD, a clinical pathologist, both of Tulane University School of Medicine. That study aimed to understand the natural history of SARS CoV-2 infections among special populations and characterize post-covid morbidity through immune response, virus genome sequencing, cytokine response, and virus shedding. Because of the patient's involvement in the study, researchers were able to collect blood samples and do nasal swabs on a regular basis and do extensive study on the patient's response to the virus, and its genomic evolution, that justified the treatment.

The patient was undergoing treatment for lymphoma before the pandemic, and because of that treatment, he was unable to develop any antibodies against the SARS-CoV-2 virus. Doctors watched as the virus mutated over the course of 270 days. The patient was shedding virus the entire time, so even though he never developed severe illness he remained hospitalized - and in isolation - for nearly 10 months.

Drs. Drouin and Fusco requested emergency approval from the FDA and the IRB to treat the patient with REGENERON COV2 monoclonal antibody cocktail. After two treatments, the patient finally tested negative for COVID-19. Dr. Drouin says what they learned while treating this patient could help other physicians and researchers trying to help immunocompromised people with prolonged COVID-19.

"It shows how important it is to have active clinical and biological studies," said Drouin. "Without those, this person would not have been treated. He would have been just on isolation and waiting for the swab to eventually become negative."