

Researchers investigating COVID-19's brain symptoms

October 22 2021, by Lynda de Widt, Mayo Clinic News Network



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Patients diagnosed with COVID-19 may show neurological symptoms, such as loss of smell, delirium and cognitive impairment. Mayo Clinic researchers are investigating these side effects to determine whether being infected with COVID-19 influences development or progression of Alzheimer's disease and Alzheimer's disease-related dementias (ADRD).

While COVID-19 is primarily regarded as a respiratory disease, [brain scans](#) and neuropathological studies confirm [brain abnormalities](#) in some patients infected with COVID-19. In addition, a recent Mayo study revealed that approximately half of patients hospitalized with COVID-19 have elevated levels of neurofilament light in their blood. This protein is present only in neurons, which carry and transmit [electrical signals](#) throughout the nervous system, and its detection in blood indicates neuronal injury.

To examine that finding further, a team led by Leonard Petrucelli, Ph.D., a Mayo Clinic molecular neuroscientist, and James Meschia, M.D., a Mayo Clinic neurologist, is poised to investigate key questions about the effects of COVID-19 on the brain and assess long-term neurological implications of COVID-19 infection. Dr. Petrucelli is the Ralph B. and Ruth K. Abrams Professor of Neuroscience.

Adults 65 and older are especially vulnerable to COVID-19 and at higher risk of developing Alzheimer's disease-related dementias.

The researchers plan to study:

- Blood neurofilament light protein.
- Other proteins associated with Alzheimer's disease, such as tau and beta amyloid.
- Changes in cognition, behavior and daily function related to neurodegenerative disorders, which may be unmasked or accelerated by COVID-19.

Imaging for markers of brain neuroinflammation and beta amyloid pathology may help researchers determine whether neuroinflammation associated with COVID-19 triggers or accelerates the buildup of beta amyloid.

This research is funded by a grant from the National Institute of Neurological Disorders and Stroke under award 3R35NS097273-05S1.

"With this award, and leveraging the vast expertise of our multidisciplinary team, we are well-poised to elucidate the impact of COVID-19 on the brain and its contribution to ADRDs — information necessary in our quest to combat these detrimental consequences," says Dr. Petrucelli.

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Citation: Researchers investigating COVID-19's brain symptoms (2021, October 22) retrieved 28 April 2024 from <https://medicalxpress.com/news/2021-10-covid-brain-symptoms.html>

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