

Title: Can COVID-19 Cause Progression of Dementia?

Authors: Michael Olejniczak MD, Arash Ataei MD, Andrew Hoang BS, Abdul Khan BS, Victoria Lulich MD, Tayana Rodriguez MD, Taylor Sanders MD, Mathoula Bilalis MD, Kristi Boudreaux MD, Najy Masri MD

Introduction: Herein we describe a case of a patient with accelerated dementia-like symptoms following infection with COVID-19. From the beginning of the pandemic, it was clear that the infection with COVID-19 and its associated pro-inflammatory state had a multisystem effect on the body. The extent of the multisystem effects is still being elucidated. It has been known to cause cardiomyopathy, hepatobiliary dysfunction, acute pancreatitis, acute kidney injury, thrombotic events, endocrine dysfunction, dermatologic manifestations, significant rhabdomyolysis, as well as other complications. What is interesting – but perhaps not surprising – is that there are emerging data to suggest significant neurologic manifestations of COVID-19 as well. In one case series of over 200 patients from Wuhan, China, more than one third of patients had neurologic manifestations with most of them experiencing central nervous system (CNS) dysfunction such as stroke or impaired consciousness. It now appears that one of the long-term side effects of the infection may be neurocognitive decline manifesting as new or worsening dementia.

Case description: An 85-year-old man with an extensive past medical history which included COPD on home oxygen, coronary artery disease status post stent placement, and recent forgetfulness presented with a one-day history of mild nonproductive cough and was found to be COVID-19 positive. On presentation he was found to be in new-onset atrial flutter with rapid ventricular response which was rate controlled with metoprolol tartrate and prophylactically anticoagulated with apixaban. He was observed in the hospital for 48 hours to ensure no worsening oxygen requirement or return of his increased heart rate, and he was discharged home without complication. He had two more hospitalizations within the following four weeks, mostly related to worsening confusion. His wife reported that beginning two years prior, he began experiencing episodes of forgetfulness or confusion, often at night or early in the morning. After the COVID-19 diagnosis, these episodes began progressing in severity and frequency. A diagnosis of likely progressive dementia was made after CT scans and most lab findings did not demonstrate any specific acute abnormalities.

Discussion: This case demonstrates that there may be an association with COVID-19 infection and progression of dementia. Our patient had what appeared to be early signs of dementia with a rapid progression after his infectious diagnosis. There are some data that suggest more severe respiratory manifestations of COVID-19 portend to worse neurologic outcomes, especially in those with significant comorbidities. Some potential causes of COVID-19 manifesting neurologically include microthrombotic events leading to vascular dementia as well as increased oxidative stress from the proinflammatory state of the disease. While there is still work to be done to determine the etiology, there are clearly potential associations of COVID-19 with CNS dysfunction. Practitioners should keep this association in mind as they treat patients deemed higher risk and vulnerable to such complications.