Letter to the Editor

Do COVID-19 infection among patients increase the risk of Alzheimer’s disease?

Siukan Law 1*, Albert Wingnang Leung 2, Chuanshan Xu 3

1. Department of Science, School of Science and Technology, The Open University of Hong Kong, Ho Man Tin, Kowloon, Hong Kong.
2. School of Graduate Studies, Lingnan University, Tuen Mun, Hong Kong.
3. Key Laboratory of Molecular Target and Clinical Pharmacology, State Key Laboratory of Respiratory Disease, School of Pharmaceutical Sciences & Fifth Affiliated Hospital, Guangzhou Medical University, Guangzhou 511436, China.

Dear Editor

The coronavirus disease 2019 (COVID-19) outbreak has occurred for more than ten months. Some COVID-19 complications are still unknown. Is there any long-term effect on the neurologic manifestations after COVID-19? Will the infected patient get a greater risk of Alzheimer’s disease? May the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have a long latency period in the central nervous system? If this is possible, it has various non-specific inflammatory diseases that initiate and re-activate certain inflammatory or oxidative reactions in Alzheimer’s disease, but the neurological complications of COVID-19 are limited to individual cases or small case series according to several published papers [1].

Recently, Varatharaj et al. reported the neurological and neuropsychiatric complications of COVID-19 in 153 patients; who were divided into two groups, cerebrovascular and neuropsychiatric. 96% of patients with cerebrovascular events are also altered with mental status in the age range from 71 to 80. The results showed 43% of patients with neuropsychiatric disorders would have a new-onset psychosis such as neurocognitive, dementia, and Alzheimer’s disease [2].

In fact, COVID-19 is the disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus could infect neurons from the brain affecting the connection and formation of synapses in building another 3D multicellular in vitro tissue [3]. There was a case about a patient with acute necrotizing encephalopathy in Japan as the SARS-CoV-2 found in cerebrospinal fluid lead to swelling and inflammation in brain tissues [4]. However, this is uncommon because the chance of blood vessel infection in the brain is small. The SARS-CoV-2 can’t enter and bind to the brain cells through an angiotensin-converting enzyme 2 (ACE-2) protein receptor [5]. Thus, it seems to be impossible for the central nervous system to get an infection from the SARS-CoV-2.

Up to the present, most of the neurological damage is regarding the brain’s blood, oxygen, and nutrient supply from the peripheral vessels.

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cardiovascular and cerebrovascular diseases are frequently co-existed to cause Alzheimer’s disease. There is not enough evidence supporting COVID-19 infection patients would increase the risk of Alzheimer’s disease.

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**References**


