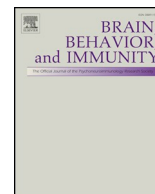




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Nervous system damage after COVID-19 infection: Presence or absence?



Dear Editor:

Many thanks for the comments and suggestions on our recently published review (Wu et al., 2020). Coronavirus disease-19 (COVID-19) has been widely spread around the world, and more than two million infected patients have been confirmed until April 16, 2020. It is well recognized that the deleterious impact of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on the central nervous system cannot be ignored. In addition to the first case of the brain damage caused by SARS-CoV-2 in Beijing Ditan Hospital (Xiang et al., 2020), a recent article also reported a case of SARS-CoV-2 infection-related encephalitis (Ye et al., 2020). These findings are sufficient to support the deleterious effects of SARS-CoV-2 on brain function, but the exact mechanism remains to be determined.

Vavougiou (2020) proposed that the furin-like cleavage site of coronavirus is an important determinant for its neurotropism. We found that the S-protein cleavage by furin or furin-like proteases plays a key role in the invasion and virulence of SARS-CoV and Middle East Respiratory Syndrome coronavirus (MERS-CoV) (Millet and Whittaker, 2015). In addition, furin-like proteases also determine the host specificity and tissue tropism of these coronaviruses (Millet and Whittaker, 2015), which probably allow coronaviruses to infect nervous system through membrane fusion. However, it has not been determined whether the furin-like cleavage site on the spike protein of SARS-CoV-2 has a specific role in its invasion of nervous system. Further studies are therefore strongly required.

Given the particularity of brain tissues, there is currently no pathological evidence to support viral infection in nerve tissue, so these sporadic cases remind clinicians to pay more attentions to the impact of SARS-CoV-2 on brain functions. Furthermore, the current reports are all about the short-term effect of SARS-CoV-2 on nervous system, while the

long-term effect may appear in the subsequent investigations.

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Yeshun Wu^{a,b}, Xiaolin Xu^c, Ling Yang^b, Cunming Liu^{a,*}, Chun Yang^{a,*}

^a Department of Anesthesiology and Perioperative Medicine, The First Affiliated Hospital of Nanjing Medical University, Nanjing 210029, China

^b Department of Cardiology, The Third Affiliated Hospital of Soochow University, Changzhou 213003, China

^c Department of Anesthesiology, Tongji Hospital, Tongji Medical College, Huazhong University of Science & Technology, Wuhan 430030, China

E-mail addresses: cunmingliu@njmu.edu.cn (C. Liu), chunyang@njmu.edu.cn (C. Yang).

* Corresponding authors at: Department of Anesthesiology and Perioperative Medicine, The First Affiliated Hospital of Nanjing Medical University, 300 Guangzhou Road, Nanjing 210029, China.

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