

COVID-19 and Nervous Relation

Vijay Kumar*

Assistant Professor, Amity Institute of Neuropsychology and Neurosciences, Amity University, Noida, UP, India

***Corresponding Author:** Vijay Kumar, Assistant Professor, Amity Institute of Neuropsychology and Neurosciences, Amity University, Noida, UP, India.

Received: July 03, 2020

Published: August 01, 2020

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The outbreak of novel coronavirus disease (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has challenged the healthcare community around the world. As of July 3, 2020, there were over 10 million confirmed cases worldwide, with total deaths more than 5 lakhs (5% of total cases), and over 5 million recovered cases (53% recovery rate).

The COVID-19 predominantly affects the respiratory system, causes alveolar damage, edema, and inflammation [1]. However, many experimental studies and case reports on coronaviruses (CoVs) highlighted their potential neurotropism. The neuro-invasive propensity has been illustrated as a common feature of CoVs. The SARS-CoV and SARS-CoV-2 showed the greater similarity, it is quite possible that they also possess similar potential. The neurotrophic viruses may enter the brain by direct infection injury, hypoxic injury, blood circulation pathway, immune-mediated injury, neuronal pathway, and include other mechanisms [2]. After the invasion, the impact of SARS-CoV-2 on neurological manifestation and complications can be seen in central and peripheral nervous system. The reported central nervous system manifestations include encephalopathy, Acute Hemorrhagic Necrotizing Encephalopathy (ANE), Acute myelitis, cerebrovascular accident, Encephalitis, headache, and dizziness [3-7]. The Peripheral nervous system included skeletal damage, anosmia, and chemosensory dysfunction and Guillain Barre Syndrome (GBS) [8].

Neurological investigations suggested that SARS-CoV-2 is a neurotropic virus and leads to multiple neurological manifestations. Transcribrial spread of SARS-CoV-2 to the brain is evident since hyposmia/anosmia is one of the initial symptoms presented

in patients [9,10]. There are many facets of COVID-19 that needs to be addressed. As the time passes in the ongoing pandemic, scientists are continuously studying and collecting data on SARS-CoV-2 [11]. The pathogenesis and involvement of nervous system, alveolar system, vascular endothelial system along with end-organs in COVID-19 are now becoming clearer. With a speedy rising case of COVID-19 with neurological manifestations, there is an utmost need to understand the underlying pathophysiology of neurological manifestations in COVID-19 patients to develop effective treatment strategy.

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