

COVID-19-Associated Encephalopathy (COVEP): Basic Aspects of Neuropathology

Subjects: [Infectious Diseases](#)

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SARS-CoV-2, a member of the betacoronavirus group and causative agent of COVID-19, is a virus affecting multiple systems, not only the respiratory. One of the systems affected by the virus is the central nervous system, with neuropathological studies reporting a wide set of morphological phenomena—neuroinflammation, vascular and blood-brain barrier alterations, neurodegeneration, and accelerated aging, while contradicting data is present on the direct neuroinvasive potential of the virus and active viral replication within neurons. The depicted changes, other than an acute effect (which may contribute to the death of the patient) also have chronic sequelae in the context of post-COVID syndrome cognitive impediments, sleep, and mood disorders. The following chapter describe the basic neuropathological aspects of SARS-CoV-2 as based on the present evidence in scientific literature and propose the term COVEP—COVID-associated encephalopathy—to unite the undisputed effects of the infection on nervous system morphology and function.

SARS-CoV-2

COVID-19

central nervous system

anosmia

neuropathology

encephalopathy

The novel coronavirus disease, which began its outbreak in 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has emerged as a multisystem disease [\[1\]\[2\]\[3\]](#). While initially regarded as a respiratory system disease, one of the earliest peculiarities of the disease was the development of anosmia (loss of smell sensation) and ageusia (loss of taste perception) by those infected, which pointed toward nervous system involvement as well [\[4\]\[5\]\[6\]\[7\]\[8\]\[9\]](#). Since then, many other aspects of the disease have emerged, such as renal involvement (COVAN), myopericarditis and endotheliitis, gastrointestinal system disorders, and many more [\[10\]\[11\]\[12\]\[13\]\[14\]\[15\]\[16\]\[17\]](#). With the emergence of new variants of SARS-CoV-2 that cause severe disease in significantly fewer people while also being severely more infective, the scientific focus has gradually shifted toward the chronic sequelae of infection: post-COVID syndromes where once more the nervous system takes center stage [\[18\]\[19\]\[20\]\[21\]\[22\]\[23\]](#).

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