

# Acute/ Subacute and Chronic Neuroimaging Findings of COVID-19: A Systematic Review

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## Abstract

COVID-19, a predominantly respiratory infection, is demonstrated to cause neurologic complications even in the recovery phase. This systematic review aims to investigate the neuroimaging findings in Acute/ Subacute and Chronic or Post-COVID-19 patients. We searched the online databases of PubMed, Scopus, and Web of Science, using relevant keywords up to December, 2021. We included all observational studies reporting neuroimaging findings in confirmed COVID-19 patients, during acute/subacute or chronic phase. We included 25 studies in our study. Structural and functional neuroimaging modalities, mainly magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), positron emission tomography (PET), and computed tomography (CT), were applied in COVID patients with valuable findings to detect the neural alterations in the brain. Hypometabolism in various regions of the brain, especially the hippocampus, parahippocampus, entorhinal cortices, cingulate, and frontal cortices as well as pons and thalamus were among findings reported in post-COVID patients. In addition, anatomical alterations in different areas of the brain including the thalamus, pons, cingulate cortex, corpus callosum, and Globus pallidus were reported. Such findings can justify several post-COVID neurological symptoms or complications. Structural and functional neuroimaging in COVID and post-COVID patients potentially can show alterations which can help in follow up of patients.

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