# Peculiarities of COVID-19 induced Cognitive Impairment in Young and Middle Age

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## Abstract

**BACKGROUND:**Many studies have shown a direct influence of viral infections on cognition, especially in the development of MCI and dementia. (Damiano, R.F, 2022). The coronavirus disease 2019 (COVID-19) pandemic emphasized the occurrence of neurological manifestations associated with SARS-CoV-2 infection and highlighted the question of the neuropathogenicity of coronaviruses. Many people infected with the SARS-CoV-2 virus experience short- and/or long-term neuropsychiatric symptoms, including cognitive and attention deficits, known as "brain fog". (Marcia N., 2021). Recent findings suggest probable short- and long-term COVID-19 impacts in cognition, even in asymptomatic individuals, which could be accounted for by direct and indirect pathways to brain dysfunction. (Miners, S., 2020). Nevertheless, understanding of the correlation of SARS-CoV-2 virus with cognitive impairment remains unclear. (Lavienraj Premraj, 2022)

Our study aims to find out cognitive disturbances among young and middle-aged (20-65 years)

COVID-19 survivors (convalescent patients), clarify the direct connection with the coronavirus and define its possible peculiarities. **MATERIALS AND METHODS:** On an outpatient basis, it is planned to examine around 114 COVID-19 survivors, between 20-65 years old, with and without cognitive impairment. As a control group, the COVID-19 infection and cognitive impairment-free healthy group are used. All groups undergo several examinations, including general neurological examination, test for cognitive function (RBANS, MOCA), depression (PHQ-9), Electrochemiluminescence for SARS-COV-2-N, and SARS-COV-2-S antibodies, Vitamins B12, B9, D, Anti-TPO, in blood plasma. Further, ELISA for NFL, GFAp in blood plasma, Capillary electrophoresis for P275 - MAPT, GRN, CRHR1 genes, P471, PSEN1, PSEN2, APP genes, and MRI examination of the brain will be performed. **RESULTS:**Our preliminary analyses demonstrate that the SARS-CoV-2 virus may trigger the existing neurodegenerative processes. We believe, that complex examination of all patients, including the assessment of genetic, risk factors, brain structure, and neurodegenerative biomarkers can help to evaluate our hypotheses and preliminary results.

**CONCLUSIONS:** A wide range of neurological manifestations, including cognitive impairments, has been associated with SARS-CoV-2 infection. There is no definite evidence to support the direct correlation of SARS-CoV-2 with cognitive impairment and further research is necessary to confirm this correlation, including direct neuropathogenicity of SARS-CoV-2 infection.

## Recent Publications

Hovhannisyan Y, Sanossian N, Kim-Tenser MA, Starkman S, Liebeskind DS, Conwit R, Hamilton S, Saver JL: Prehospital Initiation of Neuroprotection Followed by In-Hospital Thrombolysis. *European Stroke Journal* 1: 629-630, 2016



## Biography

Dr. Yekaterina Hovhannisyan, head of Neurology Service in Heratsi N1 University Hospital Complex,YSMU, Armenia, PhD-fellow at Neuroscience Laboratory, YSMU. After graduating Medical University and clinical residency program in clinical Neurology I made Stroke Fellowship at USC, Los Angeles, USA, "Primary stroke prevention" joint research program with Austria (Christian-Doppler Klinik, Paracelsus Medical University, Salzburg, Austria) and USA (New York Presbyterian Hospital/Weill Cornell Medical Center).

Currently, in clinical practice I am mainly focused on Stroke, Dementia, Neurodegenerative Disorders.

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