Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

117785

Cognitive and behaviorial features of a cohort of patients in COVID-19 post-acute phase

Elisa Canu[a], Federica Agosta[abc], Alessandra Barbieri[c], Maria Paola Bernasconi[c], Giordano Cecchetti[bcd], Marco Vabanesi[cd], Veronica Castelnovo[ab], Giacomo Giacalone[c], Monica Falautano[c], Patrizia Rovere Querini[be], Luisa Roveri[c], Massimo Filippi[acdfg], *[a]IRCCS San Raffaele Scientific Institute, Neuroimaging Research Unit, Division of Neuroscience, Milan, Italy, [b]Vita-Salute San Raffaele University, N/a, Milan, Italy, [c]IRCCS San Raffaele Scientific Institute, Neurology Unit, Milan, Italy, [d]IRCCS San Raffaele Scientific Institute, Neurophysiology Service, Milan, Italy, [e]IRCCS San Raffaele Scientific Institute, Internal Medicine, Diabetes & Endocrinology Unit, Milan, Italy, [f]Vita-Salute San Raffaele University, Na, Milan, Italy, [g]IRCCS San Raffaele Scientific Institute, Neurorehabilitation Unit, Milan, Italy*

Background and aims

To define post-acute cognitive and behavioural features in a large cohort of subjects with confirmed COVID-19.

Methods

49 subjects with confirmed COVID-19 underwent a comprehensive neuropsychological assessment and a brain MRI scan within two months from hospital discharge. Frequencies of cognitive and behavioural alterations, according to the normative data, were reported. Total brain volumes were obtained. In all patients, correlations were performed between neuropsychological performances, brain volumes and the severity of acute-phase respiratory symptoms at the time of hospital admission.

Results

At the time of the visit, 16% of patients presented with depressive symptoms and 18% reported post-traumatic stress disorder. 45% of the total sample showed executive dysfunctions, 30% visuospatial difficulties, and 25% long-term verbal and nonverbal memory problems. The youngest patients (age<50) showed the most severe profile with 75% of patients showing executive dysfunctions, 50% pure visuospatial dysfunctions and 40% primary long-term memory problems. The total sample showed a negative relationship between frontal executive performances and the severity of acute-phase respiratory symptoms at the hospital admission ($R=-0.347$; $p<0.01$). No significant relationship was observed between cognitive performances and brain volume.

Conclusions

Cognitive and behavioural alterations are associated with COVID-19 infection within two months from hospital discharge and were more severe in the youngest patients. The patient cognitive/behavioural disturbances were independent of their brain structural integrity. Further studies are needed to determine whether these alterations are directly linked with the infection itself or with its related consequences, and whether they are reversible or part of a neurodegenerative process.

doi:10.1016/j.jns.2021.117785

117786

Prospective eeg cortical sources and connectivity evaluation in patients with recent COVID-19 and cognitive disturbances: An eLORETA study

Giordano Cecchetti[abcd], Federica Agosta[abd], Marco Vabanesi[ac], Elisa Canu[b], Giovanna Fanelli[c], Alessandra Barbieri[a], Maria Paola Bernasconi[a], Serena Lazzarin[a], Matteo Impellizzeri[c], Giacomo Giacalone[a], Monica Falautano[a], Patrizia Rovere Querini[de], Fabio Minicucci[c], Luisa Roveri[a], Massimo Filippi[abcdf], *[a]IRCCS San Raffaele Scientific Institute, Neurology Unit, Milan, Italy, [b]IRCCS San Raffaele Scientific Institute, Neuroimaging Research Unit, Division of Neuroscience, Milan, Italy, [c]IRCCS San Raffaele Scientific Institute, Neurophysiology Service, Milan, Italy, [d]Vita-Salute San Raffaele University, N/a, Milan, Italy, [e]IRCCS San Raffaele Scientific Institute, Internal Medicine, Diabetes & Endocrinology Unit, Milan, Italy, [f]IRCCS San Raffaele Scientific Institute, Neurorehabilitation Unit, Milan, Italy*

Background and aims

Given the evidence of long-term neurological complications following COVID-19, including cognitive impairment[1], we aimed at assessing EEG cortical source densities (CSD) and linear lagged connectivity (LLC) values and their clinical, structural brain MRI and neuropsychological correlates in patients with recent COVID-19.

Methods

We enrolled 49 adult patients with recent COVID-19, good recovery and cognitive disturbances, observed at 2-months post-discharge evaluation. Same-day 19-channel EEG and neuropsychological testing battery were performed; 36/49 patients underwent also 3T MRI. Thirty-three retrospective, age-/sex-matched healthy controls were selected, having no history of neurological or cognitive disturbances. Using low-resolution brain electromagnetic tomography (eLORETA) solutions at fixed frequencies[2], EEG lobar CSD and LLC values of COVID-19 and healthy subjects were investigated. Correlations with cognitive scores, recent and past medical history and white matter hyperintensities (WMH) volume were explored.

Results

Patients showed pathological scores in memory, executive and visuo-spatial functions. 14/49 patients had symptoms suggestive of reactive depression. Analysis at delta frequency band (1.5-4.0 Hz) revealed higher CSD within bilateral frontal-temporal regions and greater LLC values between right frontal lobe and bilateral temporal and parietal-occipital lobes in COVID-19 patients. Delta CSD and LLC values positively correlated with executive performances, whereas no significant correlations were found with WMH, past and recent medical history.

Conclusions

Differently from our acute-phase study[3], EEG alterations after COVID-19 might be at least partially independent of acute infection severity and suggest instead a link with ongoing neuro-psychiatric symptoms. 8-months follow-up data will confirm the reversibility and/or evolution of our findings.

doi:10.1016/j.jns.2021.117786