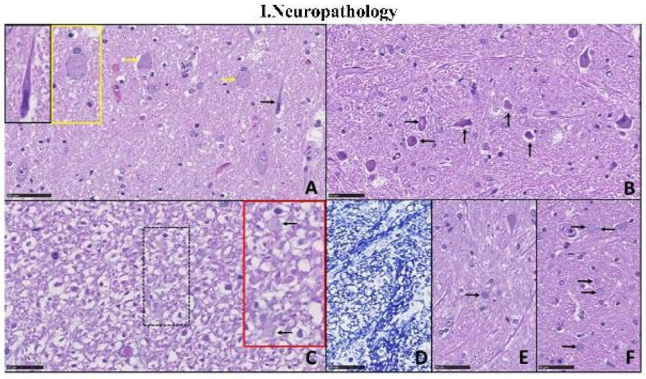
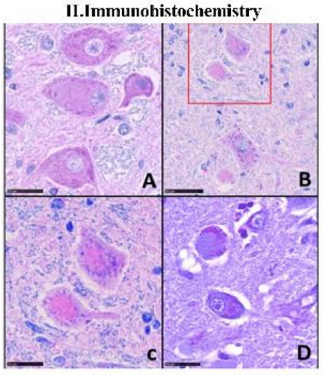
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.





functional correlate, we studied the blink reflex (BR) in 11 COVID-19 patients, admitted to our Intensive Care Unit (ICU), and compared data both with healthy subjects and non COVID-19 ICU patients. BR assesses a ponto-medullary circuitry partly involving the reticular formation (RF) close to the respiratory nuclei; RF itself modulates the activity of the respiratory centers. An extensive neurological examination, comprising the corneal and glabellar reflexes, was also performed.

Results

Autopsies showed a high percentage of neuronal damage and a higher number of CA in the medulla oblongata of COVID-19 patients; immunohistochemistry revealed the presence of SARS-Cov-2 virus in the brainstem (Fig. 1). Neurophysiologically, the medullary RII component of the BR was selectively impaired in COVID-19 and, clinically, the glabellar reflex severely impaired or absent.

Conclusions

Our findings provide the neuropathological, neurophysiological and clinical evidence of SARS-Cov-2-related brainstem involvement, suggesting a neurogenic component of respiratory failure.

doi:10.1016/j.jns.2021.117805

117806

Neurologic disease and COVID-19: A comparative study between first and second wave hospitalized patients in Brescia, Lombardia, Italy

Viviana Cristillo, Andrea Pilotto, Marcello Giunta, Martina Locatelli, Stefano Gipponi, Andrea Scalvini, Enrico Premi, Stefano Cotti Piccinelli, Alessandro Padovani, *University of Brescia, Department of Clinical and Experimental Sciences, Neurology Unit, Brescia, Italy*

Background and aims

Neurological disorders have been variably associated with SARS-CoV- 2 infection. The aim of this study is to compare clinical and laboratory characteristics and outcomes of neurological patients admitted during the first and second waves of COVID-19 pandemic in a neuro-COVID unit.

Methods

In this retrospective study, we included all adult inpatients with confirmed COVID-19, admitted to a Neuro-COVID Unit during the first (February 21–May 31, 2020) and the second (February 21–May 31, 2020) pandemic wave. Demographic, clinical and laboratory data were extracted from medical records and compared by Mann-Whitney *U* test, $\chi 2$ test or Fisher's exact test where appropriate.

Results

191 patients were included in this study, 112 admitted during the first wave and 79 throughout the second spreading. Second wave patients exhibited a lower qSOFA score on admission ($0.59 + 0.7$ vs$0.88 + 0.7$, $p = 0.010$), resulting in a less oxygen support needed. Steroid treatment was adopted in about 4% of patients admitted during the first wave, but in 53% of second outbreak, adjusted for disease severity ($p = 0.001$).The incidence of cerebrovascular diseases was significative lower in the second outbreak ($n = 28$, 34.6% vs $n = 73$, 65.2%, $p = 0.001$) with a less severity outcome (mean NIHSS score $1.8 + 4.4$ vs $9.36 + 7.3$, $p < 0.000$) and a lower in-hospital mortality rates ($n = 12$, 14.8% vs $n = 35$, 31.3%, $p = 0.009$).

Conclusions

Second wave COVID-19 patients admitted with neurological diseases exhibited a lower incidence and a reduced severity of cerebrovascular disease compared to those of the first outbreak, with less systemic inflammatory response and in-hospital mortality. Longitudinal studies are warranted in order to understand the impact of early immunomodulator treatments in neurological COVID19 patients.

doi:10.1016/j.jns.2021.117806

117807

Spectrum, risk factors and outcomes of neurological complications of COVID-19

Amy Ross Russell[a], Marc Hardwick[a], Athavan Jeyanantham[a], Laura White[b], Saumitro Deb[c], Girvan Burnside[c], Harriet Joy[d], Craig Smith[e], Thomas Pollak[f], Timothy Nicholson[f], Nicholas Davies[g], Hadi Manji[h], Ava Easton[i], Stephen Ray[j], Michael Zandi[h], Jonathan Coles[k], David Menon[k], Aravinthan Varatharaj[a], Beth Mccausland[a], Mark Ellul[j], Naomi Thomas[l], Gerome Breen[m], Stephen Keddie[h], Michael Lunn[h], Rustam Al-Shahi Salman[n], Alan Carson[n], Eileen Joyce[h], Martin Turner[o], Laura Benjamin[j], Tom Solomon[p], Rachel Kneen[j], Sarah Pett[q], Rhys Thomas[r], Benedict Michael[p], Ian Galea[a], *[a]University of Southampton, Clinical Neurosciences, Southampton, United Kingdom, [b]Aintree University Hospital, Department of Neurology, Liverpool, United Kingdom, [c]University of Liverpool, Health Data Science Network, Liverpool, United Kingdom, [d]University Hospital Southampton, Department of Neuroradiology, Southampton, United Kingdom, [e]University of Manchester, Manchester Centre for Clinical Neurosciences, Salford, United Kingdom, [f]King's College London, Institute of Psychiatry, Psychology and Neuroscience, London, United Kingdom, [g]Chelsea and Westminster Hospital NHS Foundation Trust, Department of Neurology,*