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Cohort study of neurological comorbidities and COVID-19-related case fatality

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Background and aims

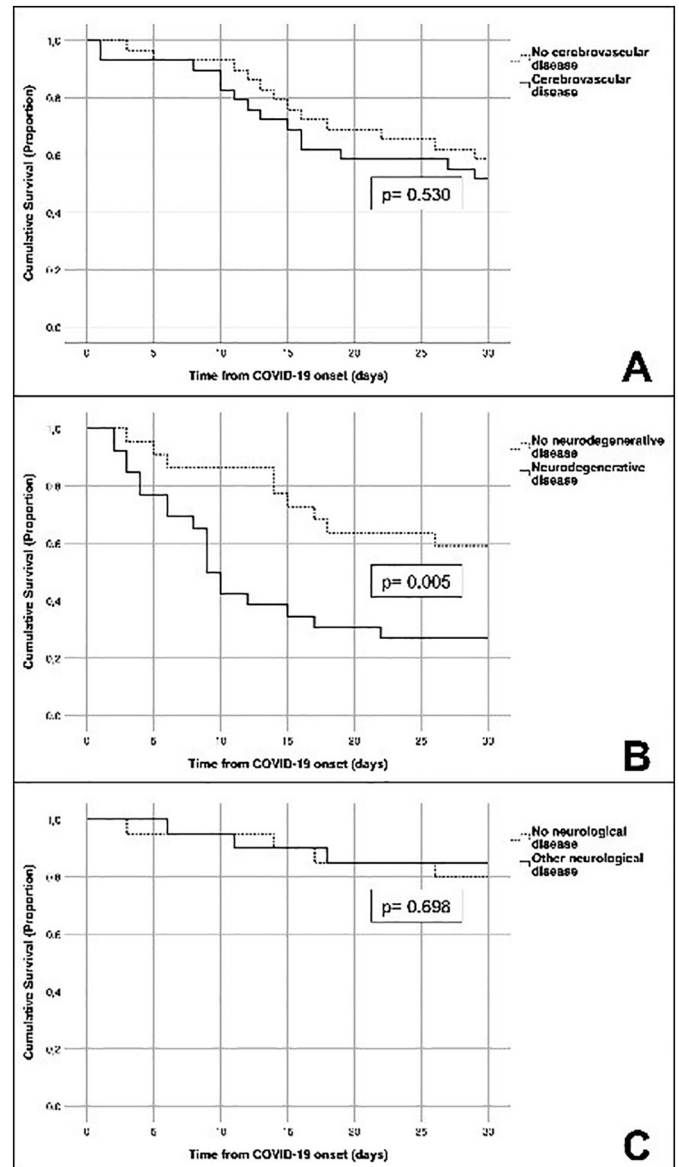
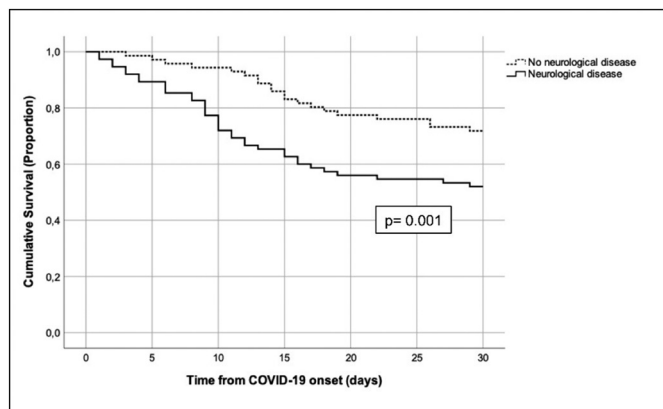
Neurological involvement in Coronavirus disease-2019 (COVID-19) is widely recognized. However, the role of pre-existing neurological comorbidities in modulating COVID-19-related mortality still remains unclear. This cohort study evaluates the COVID-19-related case fatality rate (CFR) of patients with neurological diseases.

Methods

We retrospectively evaluated all patients consecutively admitted to our hospital with a diagnosis of COVID-19 between March and April 2020. Demographic and clinical data, including 30-day survival, were retrieved. We used a multivariate regression analysis to estimate the association between neurological diseases and COVID-19-related mortality. Then, we compared the CFR and survival curves of two cohorts (patients suffering vs. those not suffering from neurological disease), matched through the propensity score (PS). Age and other comorbidities were considered for PS calculation. We applied a 1:1 matching for the entire neurological cohort and, separately, for cerebrovascular, neurodegenerative, and other neurological diseases.

Results

Among 332 patients, 75 (22.6%) were affected by neurological disease ($n = 29$ cerebrovascular, $n = 26$ neurodegenerative, $n = 20$ others). From the regression analysis, they resulted with a 2.5-fold increase of COVID-19-related mortality. From the cohort analysis, CFR resulted 2-fold higher in patients with neurological disease



(48.0% vs. 24.0%; $p = 0.002$). CFR was significantly higher in patients with neurodegenerative diseases compared to matched individuals (73.9% vs. 39.1%; $p = 0.017$), while CFR increase in patients with cerebrovascular diseases did not reach full statistical significance (48.3% vs. 41.4%; $p = 0.597$).

Conclusions

Neurological comorbidities, in particular neurodegenerative diseases, increase significantly COVID-19-related case fatality, indicating a clear priority for viral screening, access to care facilities and vaccination in these populations.

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