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Preliminary neurocognitive finding from a multi-site study investing long-term neurological impact of COVID-19 using ultra-high field 7 Tesla MRI-based neuroimaging

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P4-481 - Preliminary neurocognitive finding from a multi-site study investing long-term neurological impact of COVID-19 using ultra-high field 7 Tesla MRI-based neuroimaging

Wednesday, July 19, 2023

1:45 AM - 9:15 AM

Theme

Clinical Manifestations

Abstract

Background: Globally, over six hundred million cases of SARS-CoV-2 have been confirmed. As the number of individuals in recovery rises, examining long-term neurological effects, including cognitive impairment and cerebral microstructural and microvascular changes, has become paramount., We present preliminary cognitive findings from an ongoing multi-site study investigating the long-term neurological impacts of COVID-19 using 7 Tesla MRI-based neuroimaging.

Methods: Across 3 US and 1 UK sites, we identified adult (>=18) COVID-19 survivors (CS) and healthy controls (HC) without significant pre-existing medical, neurological, or psychiatric illness. Using the National Alzheimer's Coordinating Center (NACC) Uniform Data Set (UDS-3) battery and Norms Calculator, 12 cognitive scores were adjusted for age, sex, and education and classified as either unimpaired or mild (<9th percentile), moderate (<2nd percentile), or severely impaired (<1st percentile). The observed frequency of impairment across the two groups is reported along with proportional differences (PD) and confidence intervals (CI). Illness severity and time since infection were evaluated as potential associates of cognitive impairment.

Results: Over a period of 11 months, we enrolled 108 participants. At the time of reporting, 80 (46.3% female; mean age: 60.3 ± 8.6; 61 CS, 19 HC) had completed cognitive assessments. Of the participants for whom we ascertained time since symptom onset and illness severity (n=51 and 43, respectively), 31.4% had their index COVID-19 infection within the past year, and 60.5% had a severe to critical infection (Table 1). Table 2 reports observed frequency of impairment for each metric. Aggregating all 12 cognitive metrics, we found 45 (73.8%) of CS had at least one impairment [vs HC: 10 (52.6%)]. A significantly greater proportion of CS had at least one moderate to severe or severe impairment (Figure 1). CS also had significantly higher frequencies of presenting with two or more mild to severe impairments [PD 0.33 (0.13, 0.54)]. Illness severity and time since infection were not significantly associated with cognitive impairment.

Conclusion: Our preliminary results are consistent with potentially sustained COVID-associated cognitive impairment in a subset of participants. Enrollment in the multi-site

cohort is ongoing, and updated results will be presented along with ultra-high field MRI-based neuroimaging correlates.

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