

MetroHealth Medical Center**RESEARCH DAY 2023****Abstract Submission Form**

Poster Title: The Impact of a Traumatic Brain Injury Within 1 Year of COVID-19 Hospitalization: A Propensity-Match Analysis

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Despite traumatic brain injury (TBI) being a public health crisis worldwide, the relationship between the prevalence of a recent TBI and adverse outcomes following hospitalization due to SARS-CoV-2 infection (COVID-19) remains poorly understood. This study aims to identify whether patients with a recent TBI face increased risk of mortality and adverse outcomes associated with COVID-19, as compared to patients without a recent TBI.

We queried the TriNetX United States Collaborative Network and identified patients with a recent TBI within 1 year of a hospital encounter for COVID-19. A propensity-match analysis was performed using baseline demographics and past medical history to compare patients with a recent TBI and COVID-19 to a cohort of patients with COVID-19 without recent TBI. We collected outcome measures within 1 month of COVID-19 diagnosis relating to overall mortality, intensive care unit (ICU) admission, and in-hospital complications. A Kaplan-Meier survival (KMS) analysis was performed to determine overall survival differences. A total of 13,970 patients were identified in each cohort. The mean age was 59 years old, and over 51% of patients were male. Compared to patients without a recent TBI, patients with a recent TBI had increased risk of hospitalization (OR 3.7 [95%-CI 3.5-4.0]; $p < 0.001$), intubation (OR 2.4 [95%-CI 1.9-3.0]; $p < 0.001$), ICU admission (OR 3.7 [95%-CI 3.3-4.0]; $p < 0.001$), respiratory failure (OR 1.5 [95%-CI 1.4-1.6]; $p < 0.001$), hepatic injury (OR 1.7 [95%-CI 1.3-2.3]; $p = 0.001$), and overall mortality (OR 2.5 [95%-CI 2.2-2.8]; $p < 0.001$) within 1 month of COVID-19 diagnosis. Recent TBI patients had reduced risk of cardiac injury (OR 0.8 [95%-CI 0.7-0.9]; $p < 0.001$). KMS analysis demonstrates that patients with prior TBI had increased mortality within 1 month of COVID-19 diagnosis (HR 2.5 [95%-CI 2.2-2.9]; $p < 0.001$).

To our knowledge, this is the first study examining how a recent TBI may affect COVID-19 severity and outcomes. We hope that these results can be used to inform the care of patients with a recent TBI currently hospitalized with COVID-19 and improve patient outcomes.