

## **ORT\_13 - Cohort study correlating the levels of biomarkers: neurofilament light chain (NFL), glial fibrillary acidic protein (GFAP), carboxy-terminal ubiquitin hydrolase L1 (UCH-L1) and TAU protein in patients with acute COVID-19**

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**Introduction:** The coronavirus disease 2019 (COVID-19) pandemic, caused by severe acute respiratory disease coronavirus 2 (SARS-CoV-2), has been described by its heterogeneous evolution and outcomes. The level of almost all analytes can change, presenting a correlation with disease severity and survival; however, the correlation between biomarkers and COVID-19 still needs further investigation to be implemented into clinical practice.

**Objectives:** Therefore, the objective of this study was to correlate the levels of biomarkers neurofilament light chain (NFL), glial fibrillary acidic protein (GFAP), carboxy-terminal ubiquitin hydrolase L1 (UCH-L1), TAU protein in patients with acute coronavirus disease with the outcome of death to better understand their association.

**Methodology:** Blood had been collected to investigate biomarkers of neuronal damage in those patients. Statistical analysis using the Kruskal Wallis and Mann-Whitney U test with a cohort of 104 patients divided them into two groups: Mild Covid-19 and severe Covid-19. Each of these groups was compared with its homologous biomarker from a control group. This evaluation was performed using the SIMOA platform, which allows an ultrasensitive analysis of neuroinflammatory biomarkers in peripheral blood.

**Results:** When comparing the levels of GFAP, NFL, UCH-L1 and TAU, the severe group is the one with the highest levels of these biomarkers compared to the control. With the mild group presenting results very similar to those of the control group. Among the deaths, it can be observed that in both of the four biomarkers analyzed, patients with higher plasma levels of these biomarkers were closely linked to the death outcome.

**Conclusion:** These are important markers of neuroinflammation and may be related to neurological manifestations in the acute phase. It is important to highlight that TAU protein is already a well-established biomarker for mortality outcome. These intense variations, combined with the clinical condition of the patients, may be an indication of the relevance of these biomarkers for the progression and evolution of COVID-19.

**Keywords:** Covid-19, Virology