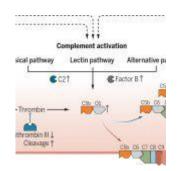
Long COVID and complement activation



While most individuals infected with the SARS-CoV-2 virus recover from the acute illness, a notable subset experience prolonged symptoms referred to as Long Covid, which present a diverse range of manifestations. The exact causes and mechanisms behind Long Covid remain unclear, and diagnostic tools and specific treatments are currently unavailable.

In a recent study, researchers have identified the complement system as playing a pivotal role in Long Covid (Figure 1). This system, integral to the innate immune response, typically assists in combating infections and removing damaged or infected cells from the body. However, in individuals with Long Covid, the complement system fails to revert to its normal state and remains activated, resulting in damage to healthy cells.

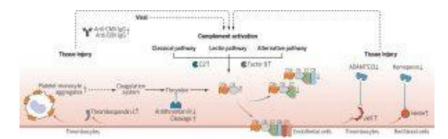


Figure 1: Pathomechanistic model of Long Covid. Model of complement-mediated thromboinflammation, showing increased and decreased biomarkers (up arrows and down arrows, respectively) measured at

6-month follow-up in patients with persistent Long Covid symptoms compared with recovered COVID-19 patients and healthy controls. Measurements were done using proteomics, spectral flow cytometry, single-cell transcriptomics, high-throughput antibody measurements, and targeted assays. Red arrows mark activating protein interactions, and blue arrows mark inhibiting protein interactions. Dashed arrows connect changes in different biological pathways.

Analyses of protein alterations in <u>Long Covid patients</u> have confirmed heightened activity of the complement system. Those experiencing active Long Covid also displayed elevated blood levels suggestive of damage to various types of body cells, including red blood cells, platelets, and blood vessels.

Journal article: Carlo Cervia-Hasler, C., et al., 2024. <u>Persistent complement dysregulation with signs of</u> <u>thromboinflammation in active Long Covid.</u> *Science*.

Summary by Stefan Botha