

Long COVID in women may be linked to inflammation levels at peak of infection, new research suggests

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Women who have mild inflammation in the acute stages of COVID-19 infection may be more likely to experience a particular set of long

COVID symptoms, according to new research.

The study, carried out by clinical researchers at the University of York, Hull York Medical school (HYMS) and the Hull University Teaching Hospital NHS Trust, found that women who survived severe COVID in the first wave of infection in 2019 were more likely to experience the muscle ache, low mood and anxiety that characterizes long COVID if their blood showed signs of inflammation while they battled the disease.

The research examined the cases of 144 COVID survivors, to explore possible pathways for further research into potential drivers of persisting symptoms in long COVID. A significant number of the survivors were experiencing lingering symptoms, including fatigue (54.2%), breathlessness (52.8%), and sleep disturbance (37.5%) three months post-recovery.

Blood samples

The researchers looked at [blood samples](#) taken from the patients at the peak of their COVID-19 infection. They found that for many of the patients with lingering symptoms, and particularly the women, the samples showed elevated biomarkers indicating inflammation activity in the body, including Interleukin-6, C-reactive protein, troponin-T, and ferritin.

Scientists have been working to unravel the complexities of long COVID since the first reports of the condition began to emerge shortly after the initial wave of the pandemic in early 2020. This observation sheds new light on the long-term effects of the virus by suggesting a potential link between inflammation and persistent symptoms in women, the researchers say.

Urgent need

Co-author of the study Christina van der Feltz-Cornelis, Professor of psychiatry and epidemiology at the Department of Health Sciences and Hull York Medical School, University of York, said, "The findings of this explorative study align with other research showing elevated inflammatory biomarkers in [mood disorders](#), anxiety disorders and fibromyalgia.

"Further research is needed to confirm these findings. The gender aspect is a relevant finding for clinical interpretation. It shows there is an urgent need for large research studies exploring gender-specific aspects of low-grade inflammation in long COVID and in mental health conditions."

Mixed condition

Co-author of the study Dominic Sykes, respiratory physician and Academic Clinical Fellow at HYMS, the University of Hull, added, "These findings show how long COVID can be a mixed condition with physical and mental health symptoms, and how [inflammation](#) in the acute phase may play a role in that. We need further research into the role of serum biomarkers to be able to predict the long-term prognosis in patients who had COVID-19 infection."

Potential benefits

Mike Crooks, Professor in respiratory medicine at HYMS, Hull University, said, "This study is a hypothesis-generating study to inform further research into persistent symptoms in long COVID. It provides evidence of the potential benefits of an acute phase assessment of biomarkers to predict outcomes following acute COVID-19, which warrants further investigation. The close alignment of clinical care and

research is essential to support evidence-based practice going forward."

More information: Dominic L. Sykes et al, Examining the relationship between inflammatory biomarkers during COVID-19 hospitalization and subsequent long-COVID symptoms: A longitudinal and retrospective study, *Immunity, Inflammation and Disease* (2023).
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