Proteins in saliva could aid in COVID-19 detection and predict severe illness

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Researchers have identified a family of proteins that is significantly elevated in the saliva of patients hospitalized with COVID-19. The proteins, known as ephrin ligands, could potentially serve as a biomarker

to help doctors identify patients who are at risk for serious illness.

"Ephrins are detectable in saliva samples and could serve as adjunct markers to monitor COVID-19 disease progression," said study author Erika Egal, DVM, Ph.D., a postdoctoral fellow in the laboratory of Patrice Mimche, Ph.D., in the Department of Pathology at University of Utah Health in Salt Lake City. "We can collect saliva without harm or discomfort for most patients, which can reveal patient responses to COVID-19 and potentially guide care."

Egal will present the findings at the American Physiological Society annual meeting during the Experimental Biology (EB) 2022 meeting, held in Philadelphia April 2–5.

For the study, researchers analyzed saliva samples collected from patients admitted to the University of Utah Hospital emergency department with respiratory symptoms. Sixty-seven of the patients tested positive for COVID-19 while 64 patients did not. The researchers found that the presence of ephrin ligands in saliva was strongly associated with the diagnosis of severe COVID-19.

Researchers said the study findings could help shed light on the biological processes involved in severe reactions to COVID-19 infection. Previous studies suggest ephrins play a role in injury and inflammation. The scientists say more research is needed to determine whether ephrin concentrations are linked with a higher likelihood of hospitalization, critical illness or death. In addition, as new viral variants emerge, it can be difficult to tell whether existing COVID-19 tests are able to accurately detect infections involving new variants. Looking for ephrins in saliva could offer a simple, non-invasive way to provide corroborating evidence when there is inconsistency between test results and the clinical picture, Egal said.

"Saliva is packed with information beyond detecting the COVID-19 infection itself," said Mimche. "We demonstrate that immune cells, cytokines and soluble proteins can be reliably measured from saliva samples. Our findings provide a starting point for investigations looking into causal pathways between infection and bad medical outcomes."

The research was overseen by Mimche in collaboration with Theodore Liou, MD and My N. Helms, Ph.D., from the Department of Internal Medicine at University of Utah Health, as part of a multidisciplinary project to better understand the biology of SARS-CoV-2 and how it causes serious COVID-19 infections.

  More information: Egal will present this research from 2:45–3 p.m., Monday, April 4, in Room 204 B, Pennsylvania Convention Center (abstract) and from 10:15 a.m.–12:15 p.m., Tuesday, April 5, in Exhibit/Poster Hall A-B (abstract).

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