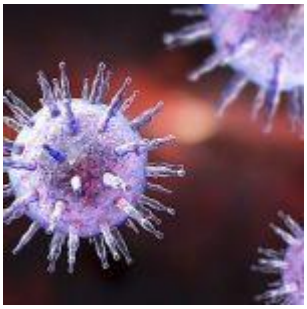
Predicting patient responses to COVID-19 immunotherapies



According to data from a phase 2 trial, researchers have discovered inflammatory markers that may help identify COVID-19 patients who are more likely to react to treatments like the anti-cancer medicine pacritinib. JAK2 inhibitor pacritinib, which the Food and Drug Administration (FDA) has authorized as a cancer treatment, prevents the immune system from sending messages that encourage inflammation.

The JAK2 inhibitor baricitinib and the IL-6 inhibitor tocilizumab, which have both been demonstrated to enhance outcomes in patients with severe COVID-19, were two other authorized immunotherapies that the researchers said may be used as a model to help choose.

In this present study, they failed to demonstrate pacritinib's superiority to the standard-of-care management of hospitalized COVID-19 adults with acute respiratory distress syndrome even though they identified subtypes of COVID-19 patients with hyperinflammation who could benefit from the drug, due to several factors.

One or more of the Janus kinase enzymes (JAK1, JAK2, JAK3, and TYK2), which are known to induce inflammation, are inhibited by a family of drugs called JAK inhibitors. They do this by conveying signals from cytokines, proteins that bind to immune cell receptors and release cytokines that promote inflammation. JAK inhibitors disrupt this process by

obstructing the enzyme signaling route and reducing immune system activity. Pacritinib is a selective JAK inhibitor, which means it only inhibits the JAK2 and IRAK1 enzymes while leaving JAK1 unaffected.

It was the first study show that certain inflammatory markers, such as Interleukin 6 (IL-6), a cytokine known to be a major cause of inflammation, may help identify which COVID-19 patients may react to immunotherapy the best.

Journal article: Cafardi, J, et al., 2022. Efficacy and Safety of Pacritinib vs Placebo for Patients With Severe COVID-19. *JAMA Network Open*.

Summary by Stefan Botha