Patients with severe COVID-19 pneumonia treated with leukotriene inhibitors are more likely to survive
25 May 2022, by Ellen Goldbaum

University at Buffalo biomedical informatics researchers have found that patients hospitalized with COVID-19 pneumonia had a 13.5% survival advantage when treated with a combination of leukotriene inhibitors (LTIs) and the steroid dexamethasone.

"This retrospective study demonstrates the effectiveness of using big data to make important clinical advances," said Peter L. Elkin, MD, first author on the study, professor and chair of the Department of Biomedical Informatics in the Jacobs School of Medicine and Biomedical Sciences at UB and a researcher with the Department of Veterans Affairs.

"While prospective clinical trials are needed to confirm these retrospective, big data science findings, our study suggests that LTIs are a promising new therapy for severe COVID-19 infection," he said.

The study shows that patients with low oxygen saturations who are treated with leukotriene inhibitors in addition to dexamethasone have a 13.5% inpatient survival advantage in COVID 19 infection. Patients on LTIs prior to hospitalization who were continued on their LTI had a 22% survival advantage.

"This represents a new treatment with very strong results and when implemented, should save lives broadly," said Elkin, who sees patients through UBMD Internal Medicine and at the VA Western New York Healthcare System.

The paper was published May 16 in the Journal of Clinical and Translational Science.

The 13.5% survival advantage was found in severely ill patients presenting with oxygen saturation of 50% or less.

The researchers also found that treating severely ill COVID-19 patients with dexamethasone alone did not have any beneficial effect on mortality or morbidity.

The motivation for the study stemmed from the observation early on in the pandemic that COVID-19 patients were dying from acute respiratory distress syndrome (ARDS), a type of lung failure.

"I knew that IL6 and IL8 (interleukin 6 and 8) were bad prognostic indicators in ARDS," said Elkin. "I also knew that leukotriene inhibitors decrease these inflammatory mediators, so we hypothesized that they may be useful in decreasing mortality and morbidity in COVID-19 pneumonia."

Patients treated with LTIs had lower rates of inflammation and the "cytokine storm" seen in COVID-19 pneumonia.
The researchers used the Department of Veterans Affairs (VA) Corporate Data Warehouse to create a cohort of COVID-19 positive patients and tracked the use of leukotriene inhibitors in combination with dexamethasone between November 1, 2019 and November, 11, 2021.

Patients in the study who had asthma, and who were found to be at higher risk for severe outcomes from COVID-19 did better when treated with LTIs and dexamethasone than did patients with asthma who weren't treated with these drugs.

Elkin noted that patients who were being treated with the combination of LTIs and dexamethasone were in general more compromised than patients who weren't treated with this combination.

"This makes it likely that our finding of 13.5% improved survival is an underestimate of the true effect, as the LTI users were in general had more comorbidities than the patients who weren't treated with LTIs," he said.

Measured inflammatory markers such as IL6 were reduced in the LTI cohort.

The number of LTI users and non-LTI users who had received at least one vaccination was roughly the same at approximately 9% and 9.3%.

The Corporate Data Warehouse that was made available to the researchers by the VA was an invaluable resource, Elkin said.

"The VA's massive national electronic health records dataset is a gold mine for understanding real world data toward improvement in clinical care and improved health of our patients," he said.


Provided by University at Buffalo

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