

Tocilizumab; A potential remedy against the ever-evolving threat of Coronavirus-2 (SARS-CoV-2)

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Madam, Coronavirus-2 (SARS-CoV-2) is a novel positive single-strand RNA virus that is the causative agent of COVID-19, which originated in Wuhan, China, at the end of December 2019. Since the beginning of 2020, this virus has taken the world by storm, brought the globe to an absolute crawl for the last two years, and overburdened healthcare facilities in numerous countries. The Coronavirus-2 (SARS-CoV-2) virus is transmitted via aerosolized droplets, and once the virus finds itself inside the host's body, it undergoes an incubation period between 6-7 days. After the viral incubation period passes, the patient suffers from fever, cough, dyspnea, myalgia, and, in severe cases, hypoxia that requires hospitalization and mechanical ventilation.¹ The pathogenesis of COVID-19 involves the dysregulation of the host immune response, which may lead to the development of acute respiratory distress syndrome in the host. The dysfunction of the host's immune response involves the hyperactivation of the humoral pathway, resulting in the overproduction of interleukin-6. Elevated levels of Interleukin-6 may lead to the development of numerous pathologies like respiratory failure, shock, and multiorgan dysfunction. This derangement of the host immune response would act as a potential target for several therapeutic agents to relieve COVID-19 symptoms.² One such therapeutic agent is Tocilizumab, which is a recombinant humanized anti-interleukin 6 receptor monoclonal antibody that functions by binding to membrane IL-6 R, thus preventing the formation of the complex with IL-6 and blocking the signal transmission. It is used in several inflammatory immune diseases such as Systemic Sclerosis, Giant Cell Arteritis, Takayasu Arteritis, etc. Tocilizumab has been shown to improve the hyperinflammatory and hypercoagulable state of COVID-19 patients by reducing the circulating inflammatory biomarkers.³ To support the use and clinical efficacy of Tocilizumab in the hospitalized patient, a 2021 meta-

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analysis by Kyriakopoulos C. et al. showed the effects of Tocilizumab on mortality amongst Hospitalized COVID-19 patients and to see whether mechanical ventilation would be necessary once Tocilizumab was administered. This research was a combination of observational studies and randomized control trials. The results revealed a reduction in mortalities among 27,004 hospitalized COVID-19 patients. In the meta-analysis observational studies, there was an overall 31% decrease in mortality. In the randomized control trials, there was an 11% decrease in mortality, along with a 19% decrease in the need for mechanical ventilation, showing that Tocilizumab was beneficial for all hospitalized patients.⁴ To further prove the efficacy of Tocilizumab, a clinical trial was conducted to find the effect of Tocilizumab compared to the usual care on a total of 2079 COVID-19 patients who were admitted to the hospital. Two groups were created; one received Tocilizumab, and the other group was given the usual care. In the group given Tocilizumab, about 57% were discharged, with an overall decrease in total death by 19%.⁵ So, in conclusion, Tocilizumab should be considered a possible defense against COVID-19 after further research is conducted on its effect on COVID-19 patients.

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