

## Mesenchymal Stem Cell Transplantation for COVID-19 Patients: An Emerging Therapy

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### ABSTRACT

COVID-19 infection and long-term COVID-19 syndrome remain to burden healthcare systems and cause significant morbidity and mortality. Novel molecular targets related with the dynamics of pathogenesis of COVID-19 disease, and the use of mesenchymal stem cells (MSCs) in cell therapies have been methods that deserve attention and are frequently investigated. In fact, MSCs are effective and safe alternatives for treating cytokine storm and acute inflammation, as there are no reductive medications to improve pulmonary fibrosis, Acute Respiratory Distress Syndrome (ARDS) and post complications of immune unregulation.

Eight severe/critically severe COVID-19 patients who were unable to respond to the treatment algorithms suggested by the Turkish COVID-19 Scientific Committee had MSC transplantation between April 1 and May 4, 2020. About a year later, we also performed UC-MSC transplantation in 210 patients with severe or critically severe COVID-19, and we assessed the clinical outcomes. According to the findings, stem cell therapy has the potential to reduce mortality and morbidity. Stem cells can enhance lung function and diminish symptoms by lowering inflammation, thus significantly lowers COVID-19 patients' mortality and morbidity, and specifies a recent meta-analysis study that included our findings as data from Turkey. Another meta-analysis study that included our subsequent investigation concluded that MSC transplantation is safe and beneficial for patients with severe COVID-19, which is consistent with our findings. Additionally, it can be indicated that MSCs are quite beneficial in improving the clinical signs of COVID-19 infection and lowering systemic complications significantly due to their immune modulation and regenerative properties.

Since it has a significant effect in reducing pulmonary fibrosis and enhancing lung function, it can be suggested that emerging treatment for COVID-19 is mesenchymal stem cell therapy. Studies conducted in this context point to promising results. However, further prospective studies are needed to confirm the results and establish a uniform protocol.

**Keywords:** ARDS, COVID-19, MSCs, Regenerative medicine, Stem cell therapy

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