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

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Abstract:

Statement of the Problem: 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 [1]. 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 [2].

Methodology and Theoretical Orientation: 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 [3]. 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.

Findings: According to the findings, stem cell therapy has the potential to reduce mortality and morbidity [4]. Stem cells can enhance lung function and diminish symptoms by lowering inflammation, thus significantly lowers COVID-19 patients' mortality and morbidity, specifies a recent meta-analysis study that included our findings as data from Turkey [5]. 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 [6]. 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 immunomodulation and regenerative properties.

Conclusion & Significance: 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.



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Biography

Prof.Nesrin Ercelen, MD, Ph.D., has graduated from Hacettepe University Medical School, Turkey. She had worked as a fellow in Mount Sinai School of Medicine, NY; in Reproductive Genetics Institute, Chicago between 1997-2000. She had the first license in Turkey for preimplantation genetic diagnosis labs. (2000) and Stem Cell, GMP labs and treatment center (2014) in Turkey. She has been working in university clinics in Turkey and USA for research. She has established and worked as medical director in American Hospital Genetics and Genomic Sciences Center, (2000-2010), Liv Hospital Stem Cell Manufacturing and Treatment Center, Istanbul, Turkey; Atigen Cell Center, Trabzon, Turkey (2010-2020). She is the founder and CMO in Geneis, Genetic System Solutions (www.geneis.clinic) since 2006. She has been a professor in the Uskudar School of Medicine, Department of Medical Genetics. She has published many scientific articles related to reproductive genetics, regenerative medicine, and molecular diagnosis and treatment of diseases.

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About Research Topic

Acute severe respiratory syndrome SARS-CoV-2 is the latest coronavirus that is causing the 2019-2020 pandemic. COVID-19's primary consequences are pneumonia and severe respiratory distress syndrome. In humans, coronavirus infections can be asymptomatic or cause fever, sore throat, fatigue, cough, shortness of breath, and gastrointestinal distress. Up to 5% to 10% will develop a significant, even life-threatening illness course. Coronavirus infections can cause serious pneumonia and mortality in some cases, particularly in the elderly and immunocompromised people. Although current treatment options work to treat the disease, they are insufficient to cope with its long-term effects. Several clinical studies on cell-based therapeutics targeting a wide range of patient groups utilizing various techniques for SARS-CoV-2 diseases and sequelae have been accomplished. It is encouraging to know that MSC therapy is significantly effective for COVID-19 patients in studies conducted around the world.

About Institution:

Üsküdar University, located in Istanbul, Turkey, is a scientific, quality, and contemporary educational institution. The Faculty of Medicine is dedicated to educating physicians who are knowledgeable, well-equipped, honest, hardworking, committed to their professional values and traditions, concerned with the welfare of society, seeking to serve their country and humanity, and contribute to scientific advancement. The Faculty of Medicine of Üsküdar University collaborates with the NPiSTANBUL Brain Hospital. Furthermore, Üsküdar University has research centers and multidisciplinary laboratories that are active in their activities, such as Neuropsychiatry Health Application and Research Center (NPSUAM), Neuropsychopharmacology Application and Research Center (NPFUAM), Personal Treatment Application and Research Center (KMER), Experimental Research Unit (ÜSKÜDAB). It is a prominent educational institution with a total enrollment of 24000 students, including 898 academicians, 800 medical school students, 3800 master of science students, and 300 doctoral students.

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