TREATMENT OF SEVERE CASES OF CORONAVIRUS WITH STEM CELLS

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ABSTRACT

Coronavirus disease 2019 (COVID-19) has become a global pandemic and has caused diverse clinical statuses ranging from asymptomatic carriers and mild upper respiratory tract symptoms, to severe acute respiratory distress syndrome.The following article is devoted to the treatment of severe cases of coronavirus with stem cells.

Key words: symptom, treatment, chronic disease, virus, antibody, pulmonary physiology.

As of October 12, 2021, COVID-19 has affected more than 200 countries, resulting in more than 237.5 million identified cases with 4847,462 confirmed deaths.4 Although most people recover from COVID-19 at around 2 to 3 weeks, approximately 10% of patients still have symptoms after 3 weeks and up to several months. Long-term follow-up studies of discharged severe COVID-19 patients have been reported.5,6 Improvement in exercise capacity and pulmonary physiology was found in most patients; however, 76% of patients still experienced at least one symptom 6 months after symptom onset when the patients had more severe illness. Even 12 months after discharge, persistent physiological and radiographic abnormalities remained in some patients with COVID-19. These data indicate that discharged COVID-19 patients, especially those with severe or critical disease, still need suitable intervention to improve their long-term recovery.

WHO reminded the Basic Rules for the care of patients with COVID-19 at home. In particular, it is necessary to isolate the patient infected with the virus, ventilate the room in which it is located and access it only with a mask. A person with COVID-19 needs peace, plenty of fluids, and a proper diet.

The representative office of the World Health Organization in Uzbekistan published notes on how to care for COVID-19 patients at home and how to protect their loved ones from infection for patients. WHO recommendations can be viewed in the form of infographics. Below, a text version is also provided.

The long-term consequences of human umbilical cord-derived mesenchymal stem cell (UC-MSC) treatment for COVID-19 patients are yet to be reported. This study

assessed the 1-year outcomes in patients with severe COVID-19, who were recruited in our previous UC-MSC clinical trial.

In this prospective, longitudinal, cohort study, 100 patients enrolled in our phase 2 trial were prospectively followed up at 3-month intervals for 1 year to evaluate the long-term safety and effectiveness of UC-MSC treatment. The primary endpoint was an altered proportion of whole-lung lesion volumes measured by high-resolution CT. Other imaging outcomes, 6 min walking distance (6-MWD), lung function, plasma biomarkers, and adverse events were also recorded and analyzed.

MSC administration improved in whole-lung lesion volume compared with the placebo with a difference of −10.8% (95% CI: −20.7%, −1.5%, p = 0.030) on day 10. MSC also reduced the proportion of solid component lesion volume compared with the placebo at each follow-up point. More interestingly, 17.9% (10/56) of patients in the MSC group had normal CT images at month 12, but none in the placebo group (p = 0.013). The incidence of symptoms was lower in the MSC group than in the placebo group at each follow-up time. Neutralizing antibodies were all positive, with a similar median inhibition rate (61.6% vs. 67.6%) in both groups at month 12. No difference in adverse events at the 1-year follow-up and tumor markers at month 12 were observed between the two groups.

We performed a PubMed search for studies published, up to July 20, 2021, evaluating the effect of mesenchymal stem cells (MSCs) in patients with COVID-19. The search terms used were “COVID-19″ or “SARS-CoV-2″ and “mesenchymal stem cells” and (“clinical trial” or “randomized controlled trial”). 9 study reports were found, and preliminary data indicated MSCs treatment benefit clinical outcome in the disease. However, no 1-year follow-up results of clinical trial of MSCs treatment in patients with COVID-19 has been reported.

This study is the first randomised, double-blind, and placebo-controlled clinical trial to further evaluate the long-term safety and efficacy of intravenous infusions of human UC-MSCs in severe COVID-19 patients. MSC medication showed numerically improvement in lung lesion volume compared with the placebo. MSC also contributed to higher proportion of normal CT images, lower incidence of symptoms in the 1-year follow-up. MSC treatment did not affect the production and maintenance of neutralizing antibodies in COVID-19 patients after 1 year. The incidence of adverse events was similar in the two groups.

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