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Mesenchymal Stem Cell Transplantation for COVID-19 Treatment in a Puerperium Period in Intensive Care Unit

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To Editor,

Mesenchymal stem cells (MSCs) treatment inhibits overactivation of the immune system 4 and promotes endogenous repair by improving lung microenvironment after SARS-CoV-2 infection. MSCs infusion can improve or significantly improve patients' functional results without the adverse effects observed. Therefore, intravenous transplantation of MSCs has been safe and effective for treatment in patients with COVID-19 pneumonia, especially in critically severe patients.[1] We aimed to present a patient with COVID-19 pneumonia and were given MSCs infusion, who was hospitalised in the intensive care unit after C-section.

A 33 years-old multipar woman with a history of pregnancy at 33 gestation weeks, admitted to gynaecologist with fever (>38°C) and cough. She was interned to hospital with prediagnosis of COVID-19. Chest CT showed patchy ground-glass opacity. Antiviral therapy including favipiravir could not be initiated due to teratogenic effects. Hydroxychloroquine pills (2 × 400 mg initial doses and 2 × 200 mg daily doses) were choice of the main treatment regime. At the third day of hospitalisation, she had severe dyspnoea and tachypnoea and delivery was advised so she underwent caesarean with spinal anaesthesia. Patient was interned to ICU after labour with respiratory distress and X-rays showed patchy ground-glass opacities. Due to end of labour, favipiravir (2 × 1,600 mg loading doses and 2 × 600 mg for maintenance) was added to treatment. High flow nasal cannula oxygenation, intermittent non-invasive ventilation and intermittent prone positioning were applied at ICU follow up. After 48 hours, patient did not respond above-mentioned treatments, and she was intubated. D-dimer, C-reactive-protein and ferritin levels went on increasing at tenth day. Patient situation was evaluated as cytokine storm. After tocilizumab treatment mesenchymal stem cell treatment applied two cures. At the end of third week, patient was extubated. X-rays showed dramatical healing of patchy ground-glass opacity. When she tolerated oxygenation, discharged from ICU and after to home.

MSCs can regulate inflammation through a series of mechanisms, including promoting the recruitment of regulatory T lymphocytes, such as CD4+CD25+FoxP3+T lymphocytes and CD8+CD28−T lymphocytes, inhibiting excessive proliferation and differentiation of B lymphocytes, the maturation of dendritic cells and promoting macrophages to anti-inflammatory phenotypic polarisation.[2] There is reported superiority in using MSC therapy in comparison with other treatments.[3] MSCs are easily accessible, multipotent stem cells and can be isolated from various tissues. They can easily expand to clinical volume in a suitable period of time and can be stored for repetitive therapeutic usage. Several previous studies have confirmed the efficacy of MSCs in the treatment of acute respiratory distress syndrome and acute lung injury, and umbilical cord derived MSCs can significantly reduce H5N1 virus-related acute lung injury.[4] There are uncertainties about the treatment of COVID-19 by mesenchymal stem cells. There are no approved data for the prevention and/or treatment of COVID-19 patients and clinical trials,

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including our hospital, are ongoing. Although uncertainties about the treatment, MSCs transplantation may be a good choice to treat severe COVID-19 to curb the progression of critically ill patients.

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