24. TREATMENT PATIENTS COVID-19 WITH STEM CELLS

Author: Berejanschi Anghelina

Scientific adviser: Viorel Nacu, PhD, Professor, Department of Anatomy and Clinical Anatomy, Head of Laboratory of Tissue Engineering and Cellular Culture, *Nicolae Testemitanu* State University of Medicine and Pharmacy of the Republic of Moldova.

Introduction. COVID-19 is a disease that has spread worldwide and was first detected in Wuhan-China in December 2019. The virus has spread rapidly across different geographical areas. SARS-CoV-2 affects many systems and organs, but it mainly affects the respiratory system causing pulmonary distress, severe respiratory failure.

Aim of study. To study the effect of cell therapy on the treatment of COVID-19 patients with severe respiratory failure.

Methods and materials. The study was performed based on literature review: Cells therapy in patients with COVID-19 using different sources of stem cells.

Results. According to the studies analyzed for the treatment of patients with covid-19, stem cells were used from: bone marrow, dental pulp, amniotic membrane, umbilical cord, human embryonic stem cells, fat stem cells and stromal fraction. Methods of administration: by inhalations and intravenous. Human amniotic epithelial cells and human mesenchymal stromal cells are found in the amniotic membrane of the placenta. Amniotic cells have an immunoregulatory, regenerative and anti-inflammatory role with a regenerating effect on pulmonary architecture in vivo. Stromal amniotic cells facilitate the adhesion of the key transcription factor Nrf2 to the antioxidant protein in HAMSCs. They were administered by inhalation, by nebulizer, facilitating the administration and amplifying the degree of pulmonary spread. Patients' recovery was only 6 days compared to standard-treated patients, who recovered within 22 days. Human amniotic epithelial stem cells in clinical trials were administered intravenously at a dose of 1 million cells kg; they improved the inflammatory and fibrotic response by removing lung damage. Allogeneic human umbilical cord mesenchymal stem cells were used to treat SARS-CoV-2 positive patients by introducing them in different doses: 5x107 3-day dose, 3 intravenous doses, 1x106 MSC/kg, single intravenous infusion;3x107/dose, intravenous infusion in 3 doses.

Conclusion. Stem cells in the treatment of Covid-19 patients are used in the acute phase and in the recovery period. They have the ability to inhibit cytokine storms, neoangiogenesis, increase vascular permeability and an immunomodulatory effect for better protection of alveolar tissue. Very important is the antiviral and antibacterial role that facilitates the recovery of lung function. Thus, stem cell covid-19 therapy offers the possibility of treating acute processes and facilitates post-COVID-19 recovery.