Mesenchymal stromal cells (MSCs) as a therapeutic agent of inflammatory disease and infectious COVID-19 virus: live or dead mesenchymal?

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Abstract

The COVID-19 infection is a worldwide disease that causes numerous immune-inflammatory disorders, tissue damage, and lung dysfunction. COVID-19 vaccines, including those from Pfizer, AstraZeneca, and Sinopharm, are available globally as effective interventions for combating the disease. The severity of COVID-19 can be most effectively reduced by mesenchymal stromal cells (MSCs) because they possess anti-inflammatory activity and can reverse lung dysfunction. MSCs can be harvested from various sources, such as adipose tissue, bone marrow, peripheral blood, inner organs, and neonatal tissues. The regulation of inflammatory cytokines is crucial in inhibiting inflammatory diseases and promoting the presence of anti-inflammatory cytokines for infectious diseases. MSCs have been employed as therapeutic agents for tissue damage, diabetes, autoimmune diseases, and COVID-19 patients. Our research aimed to determine whether live or dead MSCs are more suitable for the treatment of COVID-19 patients. Our findings concluded that dead MSCs, when directly administered to the patient, offer advantages over viable MSCs due to their extended presence and higher levels of immune regulation, such as T-reg, B-reg, and IL-10, compared to live MSCs. Additionally, dead and apoptotic MSCs are likely to be more readily captured by monocytes and macrophages, prolonging their presence compared to live MSCs.