

Stem Cell Biology on Covid-19

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Abstract

Stem cells are special type of cells which have unique volume to reinstate themselves and distinguish to give increase to specialized cell types for many tissues. Hence, they are the prime cells of all cell types. Stem cells can be embryonic, fetal, and adult or somatic types. Cells can be reprogrammed insincerely by the summary of endogenous transcription factors through using diseases similar retrovirus to produce iPSCs (induced pluripotent stem cells). There are proteins that are central in the rule of stem cell difference such as bone morphogenic protein -2 (BMP-2), leukocyte inhibitory factor and micro RNAs. Cutting edge study featuring stem cells will gear us to medical discovery of cell-based treatments of numerous diseases happening in animals and human lives. Apart from applications of stem cells there is a prevalent disagreement over the use of embryonic stem cells. The controversy marks the methods used to originate new embryonic stem cell lines which injury the blastocyst. However, reprogramming of adult cells into iPSCs holds great promise for reformative medicine. Development in stem cell research is ever growing and now a day it is gaining a concern and this is a promising indication that adult and embryonic stem cells will be used in the future to treat cancer, paralysis, cardiac failure, stroke, diabetes and many extra viruses. In this article we reviewed the belongings and organization of stem cells, regulatory factors of stem cell pluripotency and differentiation, reprogramming and potential clinical applications of stem cells of ethical issues on stem cell therapy.

Keywords: Cell therapy, Stem cell, Covid-19, medicine.

Mini Review

An amount of medicines is presently under investigation for the action of COVID-19 virus including anti-viral, anti-malarial, and anti-inflammatory agents. Although these treatments can recover patient's retrieval and existence, these therapeutic plans do not lead to unequivocal renovation of the lung damage imposed by this virus. Stem cell therapies and, additional newly, their concealed extracellular vehicles (EVs), are emerging as new promising actions, which could weaken inflammation but it is renew the lung damage caused by COVID-19. Stem cells apply their immunomodulatory, anti-oxidant, and reparative therapeutic affects likely by their EVs, and so that, could be beneficial, alone or in mixture with additional therapeutic agents, in people with COVID-19. In this review manuscript, we summary the mechanisms of cytokine storm and lung damage caused by SARS-CoV-2 virus leading to COVID-19 virus and how mesenchymal stem cells (MSCs) and their secreted EVs can be utilized to tackle this injury by harnessing their regenerative properties, that gives them possible enhanced clinical utility likened to other explored pharmacological treatments. There are presently 17 clinical trials evaluating the therapeutic potential of MSCs to the treatment of COVID-19, the majority of which are managed intravenously through only one clinical trial testing MSC-derived exosomes via inhalation route. While we wait for the results after these trials to be reported, here we emphasize probabilities and risks associated with these therapies, as well as delineate the main roadblocks to continuing these promising curative therapies toward mainstream treatment for COVID-19.

Most fresh explanations suggest that the devastating difficulty of COVID-19 may not be a characteristic pneumonia or ARDS, but rather a dysfunction in blood oxygenation. This declaration is maintained by the fact that over 80% of COVID-19 patients located on ventilators in New York City have died. COVID-19 patients show signs associated with high altitude without adaptation answer. Clinically these cases resemble more carefully high-altitude sickness considered by decompression pulmonary sickness or high-altitude pulmonary edema (HAPE) by distinctive landscapes of plain hypoxemia often related with near usual respiratory system compliance.

Since cytokines and inflammation play leading role in the growth of COVID-19-induced lung damage, immunological therapies capable of attenuating cytokine storm might be the key treatment choices. However, traditional immunomodulatory volume of mutual immunotherapeutic are embattled at one or two factors, which may not persuade a strong sufficient response. Currently, there are 17 clinical trials examining the therapeutic potential of MSCs in COVID-19 patients that are registered on clinicaltrials.gov website; most of these trials are either recruiting patients or have not yet started the recruitment. The vast mainstream of the trials is selecting patients with COVID-19 and pneumonia, and utilizing allogeneic bone-marrow or umbilical cord-derived MSCs transplanted intravenously on three dissimilar occasions. Around 50% of the trials are existence carried out in China.

How to cite this article: Sudhansu Sekhar Patra. Stem Cell Biology on Covid-19. Mol Biol 9 (2020):244. doi: 10.37421/mbi.2020.09.244

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Received 14 September, 2020; **Accepted** 20 September, 2020; **Published** 25 September, 2020