



Innovative Outlook for Containing COVID-19

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Received Date: June 28, 2020 / Accepted Date: July 2, 2020 / Published Date: July 22, 2020

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Abstract

Coronaviruses attack the respiratory tracts in humans, causing a range of illnesses from the common cold to more serious, fatal forms. Severe respiratory consequences of the COVID-19 pandemic have prompted urgent need distress syndrome (ARDS), although not as yet well studied in respiratory virus- for novel therapies. There is no vaccine or specific treatment for COVID-19. Current available therapies fail in severe disease where the hallmark is the cytokine storm induced by COVID-19 in the lung. Here I consider novel approaches to improve patient's biological resistance to COVID-19 using stem cells and to capture the therapeutic properties of stem cells with using nanotechnology. I am handling to inspirit a therapy for use in hopes of slowing the propagation of the disease. Cell-based approaches, primarily using mesenchymal stem cells (MSCs), have demonstrated safety and possible efficacy in patients with the acute respiratory induced ARDS. MSCs are safe and can reverse severe critical disease with high potency may representing an entirely new biological approach to treatment. Nanotechnology could provide advanced biomaterials which can create a Nano scale extracellular environment capable of promoting the adhesion and proliferation of stem cells and accelerating stem cell differentiation in a controlled manner. The investigation of stem cell based on nanotechnology could provide new methods for stem cell therapy and tissue engineering. Nanotechnology may have great potential to be of enormous help in the treatment of COVID-19. I am hopeful my outlook has implications for the development of a novel drug for the treatment of this unprecedented pandemic.

Keywords: Coronavirus, COVOD-19, stem cells, MSCs, Nanotechnology

The in progress pandemic of novel viral pneumonia of obscure reason detected in Wuhan, Hubei Province, China, has recently outspread universal have generated a worldwide health disaster. Fenggang and colleagues [1] reported that the new severe acute respiratory coronavirus 2 (SARS CoV-2) uses high-compulsive login inside angiotensin-converting enzyme 2 (ACE2) - manifesting cells. A major numeral of sick cases encountering sharp illness described by deadly acute respiratory distress syndrome (ARDS) and acute lung injury. Stem cells in the pulmonary tract and parenchyma are show to perform a big part by reacting with the virus to give rise to entrance contagion, lung harm, and reform. External MSCs appear a hopeful cell-based therapy for perfecting the immune dysregulation following acute pneumonia to retrieve pulmonary activity. Transplantation of external origin stem cells may progress to pulmonary mend and renovation.

My opinion coincides with Pan et al [2] that regenerative medicine targets to realize officious reform of tissue or cells hurtled by injure illness, or senility. New returns propose that nanotechnology supplies sophisticated biomaterials with specific morphologies which can originate a Nano scale extracellular environment qualified for fostering the cohesion and reproduction of stem cells and speeding stem cell differentiation in a planned pattern in tissue engineering.

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a big part by reacting with the virus to give rise to entrance contagion, pulmonary harm, and reform. External MSCs appear a hopeful cell-based therapy for perfecting the immune dysregulation following acute pneumonia to retrieve pulmonary activity. Transplantation of external origin stem cells may progress to pulmonary mend and renovation [1].

Whilst the COVID-19 pandemic persists to prevalence hither and thither the world the lack of a clinically confirmed antiviral treatment or a remedy specifically aiming the serious SARS-CoV-2 receptor ACE2 on a molecular standard has mean a hollow armory for health auspices provisions fighting to address dangerous states of COVID-19. Hence, proposition of a remedy with attainable, logic and appropriate approach is desperately wanted. Beneath this mode and according to my deep experience [3-10] in the scope of regenerative medicine and tissue engineering I suppose that MSCs (Fig 1) generated from the critically ill novel COVID-19 patient (autologous) implement with nanotechnology suggested as a treatment for him. Therefore, my viewpoint spots a modern curative strategy.



Fig 1: Mesenchymal stem cells (MSCs)

Two modern studies from China have required, can MSC cure COVID-19 pneumonia, the first study by Leng and colleagues [11] announced that the intravenous transplantation of MSCs was safe and effectiveness for therapy in sick cases with COVID-19 pneumonia, specifically for serious severe cases, while the second one by Liang and team [12] reported that maximum of the departed COVID-19 cases were inspired by dangerous inflammatory reply so it is highly critical to promote efficient curative factors and strategies for that severe cases. Their results proposed that the relocate treatment of human umbilical cord MSCs (hUCMSCs) might be an idealistic option to be applied or concerted with another immune amending factors to cure the crucially malady COVID-19 sick cases.

Nano medicine research about the function of chloroquine in nanoparticle intake in cells exhibited promise in evolving an efficient therapy for COVID-19 [13]. Sportelli and colleagues [14] underline the importance of nanomaterial-based technological solutions in several aspects of the fight against the COVID-19. Arora et al [15] informed that the implementation of nanotechnology to stem-cell biology would be fit to skill the challenges of illness therapeutics.

My outlook agrees with the research of Dormont and colleagues [16] explained that new COVID-19 infections have been known as driving to an over active inflammatory condition distinguished as a fulminant cytokine storm (hypercytokinemia) before acute respiratory distress syndrome and death [17]. Dormont et al offered the premiere model of earmarked submission of adenosine (Ad), and of multidrug anti-inflammatory/antioxidant nanoparticles, for the alleviation of inflammation. Bio coupling of Ad to sequalene (SQ) pliable earning a prodrug-based Nano carrier, which, after Nano formularization with tocopherol (VitE) inserted firm multidrug nanoparticles, recovering the bio accessibility of the two drugs with important pharmaceutical effectiveness in animal models of acute inflammatory lesion.

Conclusion:

As we whole endeavor to know the pandemic that has inverted everything of our lifetimes, the coronavirus has also been a pure remembers of how much scientific innovation is necessary to save the health and prosperity of the whole lot of us. The magnetic nanoparticles-based implementations in cell-based research expose novel limits in cell and tissue engineering. Amongst different areas of science and technology, nanotechnology has large chance to be of massive help in the handling of COVID-19. Here I consider new approaches to improve patient's biological resistance to COVID-19 using stem cell with application of nanotechnology. Finally, whereas medications and vaccines are beneath evolution, stem cell and nanotechnology may present an off-the-shelf cell curative choice for forbidding the reappearance of coronaviruses.

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