



COVID-19

What is Covid-19?

A novel coronavirus identified in December 2019 in Wuhan, China is now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which has since rapidly spread resulting in a pandemic.

The World Health Organization has named the disease coronavirus disease 2019 (COVID-19) [1] as cause major morbidity and mortality largely due to acute viral pneumonitis that evolves to acute respiratory distress syndrome (ARDS).

To date (15 Oct. 2020) more than 38 million confirmed cases have been reported worldwide [1].

Covid-19 in Malaysia

The first case of COVID-19 in Malaysia was detected on 24 January 2020 [2].

As of the 15th Oct 2020, there were 17,540 confirmed COVID-19 cases including 167 deaths and 11,605 cases of recovery reported by the Ministry of Health (MOH) in Malaysia [3].

How Does the Virus Spread?

Coronavirus can be spread via respiratory secretions that include:

- Coughing or sneezing by an infected person
- Direct physical contact with an infected person or touching
- Coming in contact with surfaces or objects contaminated with the virus

Who's at Risk?

Older people, and those with underlying medical problems like high blood pressure, heart problems or diabetes, are more likely to develop serious illness.

Asymptomatic

Some people get infected but they do not show any symptoms. However, they can spread the virus to other people.

Symptoms

- Fever
- Cough
- Shortness of breath
- Sore throat
- Muscle pain or tiredness

Disease Severity

Disease stage is classified according to the patient's clinical symptoms and laboratory findings as :

- (a) **mild type**: mild clinical symptoms without pneumonia
- (b) **common type**: fever, respiratory tract and other symptoms with pneumonia
- (c) **severe type**: respiratory distress
- (d) **critical type**: respiratory failure requiring mechanical ventilation, shock, and other organ failure requiring intensive care unit (ICU) monitoring and treatment [4]

Treatment

To date, no vaccine or specific antiviral therapeutic agent confirmed by the WHO be effective for COVID-19; therefore, the clinical management is largely supportive and depends on the patients' immune response which overactive immune responds may lead to a cytokine storm followed by lung edema, dysfunction of air exchange, and acute respiratory distress syndrome (ARDS).

These complications could lead to multiorgan failure and death in critically ill Covid-19 patients.

How does Mesenchymal Stem Cells Treatment Help Critically Ill Covid-19 Patient

Studies have shown that mesenchymal stem cells (MSCs) have very significant immunomodulation and tissue repair effects with low immunogenicity, which makes them a very ideal candidate for stem cell therapy.

In critically ill Covid-19 patients, overactivated immune system kills the virus resulting in production of a large amount of inflammatory factors, leading to severe cytokine storm. This terrible cytokine storm in the lung may cause severe organ injury and death. Recent studies suggest that MSCs played the vital immune modulation roles on lymphocyte subsets and can secrete anti-inflammatory factors to prevent the cytokine storm in critically ill Covid-19 patients [5].

Beneficial Effects of Mesenchymal Stem Cells (MSCs) Therapy in Critically Ill Covid-19 Patient

Benefits of MSCs therapy:

- 1) Homing to damaged sites for tissue repair and regeneration.
- 2) Promote endogenous repair by improving the pulmonary microenvironment, protect alveolar epithelial cells, prevent pulmonary fibrosis, and improve lung function.
- 3) Inhibition of inflammatory response through secretion of anti-inflammatory factors to prevent the cytokine storm which significantly improved inflammation and immune situation especially in the lung.
- 4) No side effects, stem cell therapy is well tolerated.

Success Stories

Story 1

A 70-year old female, critically ill Covid-19 patient was treated with human umbilical cord mesenchymal stem cells (hUC-MSCs) in addition to the conventional treatment. During the stem cell treatment, there were no adverse reactions related stem cell therapy. Immune system increased to normal level and inflammatory factors continued to decline. Chest computerized tomography (CT) imaging showed the inflammation in the lung of the patient was significantly reduced [6].

Story 2

A 65-year old woman was diagnosed critically ill type Covid-19 with severe pneumonia, acute respiratory distress, multiorgan injury and other symptoms. Combined with other conventional therapeutics, human umbilical cord mesenchymal stem cells (hUC-MSCs) was administered intravenously three times during the course of stem cell treatment. After stem cells treatment, many clinical symptoms of the patient have improved and chest computerized tomography (CT) imaging showed the inflammation of the patient's lung has also improved. The patient was then discharged after recovery [7].

Story 3

A 54-year old man, confirmed Covid-19 patient was treated with Wharton's Jelly mesenchymal stem cells (WJ-MSCs) transplantation therapy after his condition has worsened considering the severe organ injury caused by an inflammatory response. After stem cell treatment, the high fever was gone, shortness of breath was significantly recovering and oxygen saturation has increased. The inflammatory factors has reduced to normal level and chest computerized tomography (CT) imaging showed improved lung inflammation after stem cells therapy which improve the lung function [5].

About Us: 23 Century International Life Science Centre

23 Century Group is a pioneer status high-tech corporate major in cell manufacturing. Our technical counterpart, Beike Biotechnology Co. Ltd, has more than twenty years experiences in the development of stem cell therapies and their associated clinical applications, holding 67 patents in China and internationally. With the advanced cell preparation expertise, 23 Century Group is currently the owner to largest CGMP cell preparation laboratory in Malaysia. It will be synchronised to more than 30 laboratories throughout China.

The group has jointly formed cooperation with more than 400 domestic and overseas research and medical institutions, published more than 50 journals. Our aim is to promote health by providing hope to patients who suffer from diseases which are incurable from modern medicines using cells as a treatment option.

Reference

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