

Scientific Article Dr. Dr. Basuki Supartono, UPNVJ Lecturer Regarding Stem Cell Therapy for Corona Virus Cure

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REPUBLIKA.CO.ID, A few days ago on viral social media an "announcement" invited those who had been infected with Covid-19 and declared cured to help patients. Immediately the question arose as to what the announcement meant. What is the relationship between a Covid-19 survivor and another patient being treated? It is suspected that the patient is fighting with the Corona virus and needs help. What's the story?

This virus is very dangerous because it causes tissue structure damage and organ failure and even death. Corona virus (HCoV-19) enters the human body through the respiratory system. In the body, the viral protein binds to the ACE2 receptor (the angiotensin I converting enzyme 2) which is present in several organs such as the respiratory tract and lungs, as well as the liver, heart, kidneys, digestive tract and blood vessels.

When it enters the blood, this virus will quickly spread throughout the body. All tissues and organs will become a



powerful battlefield between viruses and various immune cells (immunity).

The immune system is not infected because it does not have ACE2 receptors. This is beneficial because it allows the body to fight back by releasing antibodies. However, it can happen that the body fails to cope, for example due to a lack of immune capacity (immunomodulatory capacity) of the body or due to age (elderly). The patient must be helped by one of them by providing specific antibodies against the Covid-19 virus.

This is what underlies the thought above, namely giving plasma to Covid19 survivors because it is hoped that this plasma will contain specific antibodies against the virus to help patients win this devastating battle. This method may work but may fail if a more complicated situation occurs.

This situation is known as a cytokine storm, namely the release of very large amounts of cytokines due to an excessive increase in immune cell activity. This cytokine is actually really needed because it functions to regulate communication among immune cells, but if the concentration is too high it can even cause paralysis of the immune system. The result is failure of various organ functions such as lungs, heart and liver and death. The storm can be overcome by controlling the immune response; by administering regulatory or immunomodulatory substances. Who can take on this role? The answer is stem cells.

Stem cells are special cells because they can regenerate themselves and are able to differentiate into other specific cells. Stem cells can even be produced, either manually or with the help of machines (quality and safe results). Sources of stem cells can come from fat, bone marrow fluid, and blood.

Stem cells are proven to be safe and widely used in disease therapy. Stem cells have the ability to form tissues. If any body tissue is damaged, the stem cells will be active, grow and develop to form new cells and tissues. Another ability is to prevent inflammation and maintain immunity (immunomodulator).

It is this ability that is expected to dampen the cytokine storm mentioned above and the amazing thing is that this ability increases when these cells interact with viruses. This has been proven in China.

In the February 2020 edition of the journal Aging and Disease (Scopus, Q1), it was reported that 7 Covid-19 patients who were already severe and critical managed to recover clinically, laboratory and radiologically after being given stem cell infusions. These stem cells are not infected with viruses because they do not have receptors so they can freely work optimally in controlling the cytokine storm, besides that stem cells also trigger the regeneration of damaged tissue.

Is it possible to apply in Indonesia?

This therapy is very promising and opens new hopes, however, its application needs to consider ethical, medical, legal and religious provisions. Technically, it is necessary to pay attention to several things, namely donors, sources, production processes, delivery methods and patient conditions. Hopefully these various things can be resolved so that there is a Covid-19 therapy which has killed tens of thousands of people including our brothers and sisters in Indonesia.

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