

Editorial

Convalescent plasma: a valid option in the treatment of COVID-19?

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In the late of 2019, there is an outbreak of novel coronavirus disease (COVID-19) in Wuhan, China. The patients appear respiratory symptoms, fever, and cough, shortness of breath and breathing difficulties. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death. A novel coronavirus (nCoV) is a new strain that has not been previously identified in humans and is transmitted mostly via droplets or contact. People of all ages are susceptible to the virus. Up to the middle of February 2020, the number of infected persons in China is over 65,000. The case fatality rate was 2.38%, and elderly men with underlying diseases were at a higher risk of death [1].

In terms of treatment, COVID-19 patients with mild symptoms received oseltamivir or/and intravenous antibiotics, while severe patients also received oxygen inhalation, mechanical ventilation. The nCoV is a new emerging virus that has not been previously identified in humans, there is no specific drugs or vaccine. Plasma from recovery patients containing nCoV-specific antibodies was considered as a feasible therapeutic option. This type of therapeutic intervention is not novel, as it has been used to deal with most life threatening epidemics. When antiviral drugs were not effective, convalescent plasma has been used as a valid option in treatment with some several infectious diseases, such as (severe acute respiratory syndrome) SARS, (influenza A/H5N1) A/H5N1 flu, Ebola, etc., [2].

But the efficacy of convalescent plasma treatment for severe infectious diseases is still controversial. A meta-analysis of the effectiveness of convalescent plasma therapy for SARS showed that the early treatment with plasma might be beneficial [3]. Besides, a total of 84 Ebola virus disease patients who were treated with convalescent plasma showed no significant improvement in survival. After clinical evaluation of convalescent plasma for ebola virus disease in Guinea, van Griensven, et al. provide additional data showing that the dose of neutralizing antibodies in the donations was low and that there was no apparent association between the dose of neutralizing antibodies and human survival [4].

More Information

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Furthermore, other research showed that the convalescent plasma specimens from survivors of Ebola virus infection showed low neutralizing activity against Ebola virus [5]. This may explain why the plasma treatment for Ebola infected patients is not effective. A case report that an influenza A (H5N1) virus infected male after received convalescent plasma from a patient who had recovered from H5N1 infection, the patient's viral load was reduced during the first 8 hours and was undetectable within 32 hours [6]. In addition, with double blind, randomized, placebo controlled trials, influenza A infected adults were randomly assigned to receive standard care plus either convalescent plasma infusion or saline placebo, but when administered alongside standard care plasma treatment was not superior to placebo for adults hospitalized with influenza A infection [7,8]. To sum up, there are still some issues to consider for the effectiveness of plasma therapy. For example, screen out potential donors with high neutralising antibody titres; the curative rates in plasma treatment trials will be influenced not only by patients' risk factors but also by the specific supportive care offered by clinical hospitals.

Now convalescent plasma treatments enter clinical practice with severe COVID-19 patients in China. Even it is reported that after infusion the plasma patients' clinical signs and symptoms were improved significantly [9], due to the lack of large-scale, randomized, well-designed clinical trials, we tend to consider convalescent plasma treatment is an experiential therapy.

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