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OVERVIEW OF CONVALESCENT PLASMA THERAPY: CORONA VIRUS(COVID-19)

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ABSTRACT

disease Corona virus 2019 (COVID-19) originated in the city of Wuhan, Hubei Province, Central China, and has spread quickly to 72 countries to date. COVID-19 is caused by a novel coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [previously provisionally known as 2019 novel corona virus (2019-nCoV)]. At present, the newly identified SARS-CoV-2 has caused a large number of deaths with tens of thousands of confirmed cases worldwide, posing a serious threat to public health., there are no clinically approved vaccines or specific therapeutic drugs available for COVID-19. Currently there are no vaccines, monoclonal antibodies(mAbs), or drugs available for SARS-CoV-2, although many are in rapid development and some may be available in as hard time. This View point argues the human convalescent serum is an option for prevention and treatment ofCOVID-19disease that could be rapidly available when there are sufficient number so people who have recovered and can donate immunoglobulin-containing serum.

KEYWORDS: Covelescent plasma therapy, benefits, SARS-CoV-2.

INTRODUCTION

The therapy, which takes the antibodies from the blood of the person who has recovered from a virus and transfuses those antibodies into the person sick with that virus, has long been used as a way to help kick start a person immune system.

The study of 10 patients in china who have undergone convalesent therapy showed a shortening of the duration of system improve oxygen level and a drop in the virus load or the

amount of virus in the patient body. Scientist hope that convalescent plasma therapy can help those sickest with the virus.

Convalescent Plasma Therapy

Convalescent Plasma Therapy involves transfusing certain components from the blood of people who have had the COVID-19 virus and recovered into people who are very sick with the virus or people who are at high risk of getting the virus.

From twentieth century convalescent sera was used to treat viral disease like infuenza, mumps, measles, convalescent sera are were developed and used in many cases without measure antibody titers or knowledge about viral serology. In the 2009-2010 H1N1 influenza virus pandemic convalescent serum antibody used to treat the Individual with H1N1 obtained from apheresis. Serum treated individuals manifested reduced viral burden, serum cytokine response and mortality. In 2013 convelesent sera used in West African Ebola epidemic. Two patient transferred in U.S. treated with convelesent serum and experimental drug serviced., every viral diseases epidemic is different and experiences confronts the covid 19 epidemic.

Convelesent plasma therapy means passive antibody therapy involves the administration of antibodies into suspeatible individuals from recovered individuals for the purpose of preventing or treating an infectious diseases. active vaccination requires the time to induction of immune response. Thus, passive antibody administration is the only means of providing immediate immunity susceptible person.

In the case of SARS-Cov-2, the anticipated mechanism of action by which passive antibody therapy would mediate protection in viral neuqtralization. Other Mechanism of action is antibody-dependent cellular cytotoxicity and phagocytosis. The only antibody types that currently available for immediate use is that found in human.

General principal of convelesent therapy is that it is more effective when used for prophylaxis than for treatment of disease. If is effective after onset of symptoms. For e.g. passive antibody therapy for pneumococcal pneumonia was most effective when administred after on set of symptoms, there was no benefits if delayed past third day of diseases.

For passive antibody therapy to be effective, a sufficient amount of antibody must be administered. When given to a susceptible person, this antibody will circulate in the blood, reach tissues, and provide protection against infection. Depending on the antibody amount

and composition, the protection conferred by the transferred immunoglobulin can last from weeks to months.

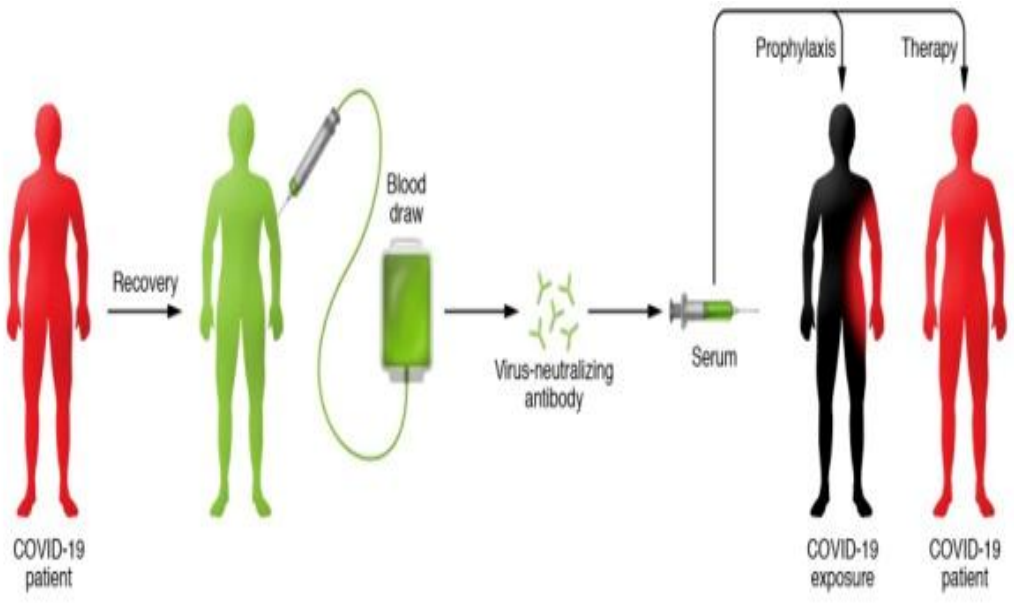

Fig. 1: Schematics representation of convalescent plasma therapy.

As people fight the COVID-19 virus, they produce antibodies that attack the virus. Those antibodies, proteins that are secreted by immune cells known as B lymphocytes, are found in plasma, or the liquid part of blood that help the blood to cloat when needed an supports immunity. Once a person has had the virus and recovered, that person has developed antibodies that will stay in their blood waiting to fight the same virus should it return. Those antibodies, where injected into another person with the disease, recognize the virus as something to attack.in the case of the corona virus, scientist say antibodies attack the spikes on the outside of virus, bloking the virus from penetrating human cells.

Corona virus patient can Benifit From Blood Of the Recovered People

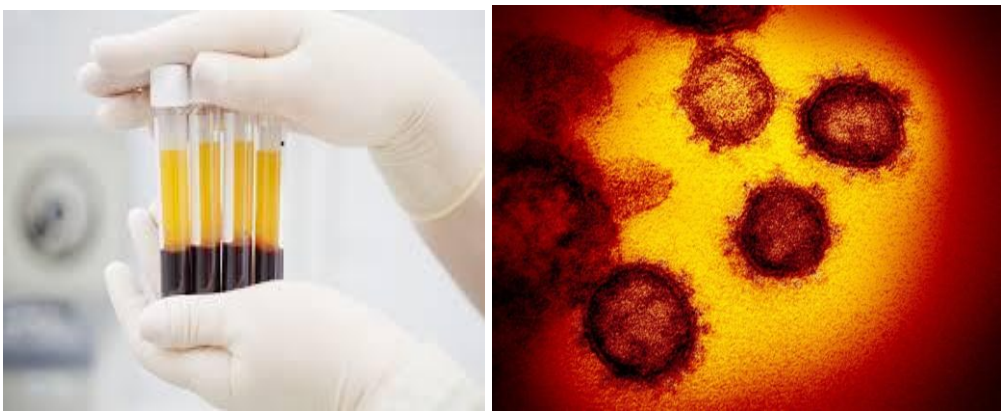

Fig. 2: Microscopic Structure of Corona Virus Form Recovered Patient.

10 patients severely ill with the new coronavirus, a single dose of antibodies drawn from the blood of people who had recovered from COVID-19 appeared to save lives, shorten the duration of symptoms, improve oxygen levels and speed up viral clearance, newly published research reports.

A patient, 46-year-old man with high blood pressure who admitted at a hospital with fever, cough, shortness of breath and chest pain, and still his blood-oxygen level was a dismal 86%. (Normal readings range from 95% to 100%.) The new pilot study signaled that the therapy will not disappoint.

Eleven days after his first symptoms had appeared, the patient received an infusion of so-called convalescent plasma. On day 12, his blood tested negative for infection with the SARS-CoV-2 virus. His body's inflammation level turned sharply down. And his blood-oxygen level had climbed to 90%. The next day, he was weaned off of the mechanical ventilation that had breathed for him for three days.

In addition to his lungs, the patient's immune system and liver function, both on the ropes at the height of his illness, were steadily returning to normal four days after he got the plasma antibody infusion.

For a 49-year-old woman with no underlying illnesses, COVID-19 infection quickly progressed to shortness of breath and hospital admission. By day seven after the onset of her symptoms, her chest X-ray had shown the hallmark opacity of ground glass and she had build-ups of fluids or proteins — infiltrates — scattered throughout both lungs. On day 10 following the onset of symptoms, she got an infusion of convalescent plasma. By day 12, she had cleared the virus from her system and her chest X-ray was clearing markedly.

A 50-year-old male with "massive infiltrates" in both lungs showed a gradual clearing of his lungs and tested negative for infection 25 days after his first symptoms appeared.

"This pilot study on (convalescent plasma) therapy shows a potential therapeutic effect and low risk in the treatment of severe COVID-19 patient," the authors of the new research wrote. "one dose of (convalescent plasma) with the high concentration of neutralizing antibodies can reduce the viral load and tends to improve cleanical outcomes," they added.

COVID-19 convalescent plasma can only be collected from recovered individual if they are eligible to donate blood and undergo required testing.

Risk of Convalescent Plasma Therapy

1. Into the case of Dengue virus, getting convalescent serum makes the patient paradoxically wrost, as it causes the virus to replicate.
2. There is also the possibility that other known or unknown pathogens could be introduced into the patient by blood.
3. There is risk for laboratory worker handling the serum a practical way to measure which individual have the highest titer of antibodies needs to be established, and the use of supportive therapies in addition to plasma will need to be investigated as well.

Donor eligibility

COVID-19 convalescent plasma is collected from the individual who need the following qualification Evidence Of COVID-19 Documented by Laboratory test either by:

A diagnostic test (nasopharyngeal swab) at the time of illness or

A positive serological test for SARS COVID-2 antibodies after recovery, if prior diagnostic testing was not performed at the time of COVID-19 suspected.

Either one of the following

1. Complete resolution of symptoms at least 28 prior to donation.
2. Complete resolution of symptoms at least 14 days prior to donation, And Negative results for COvid-19 either from one or more nasopharyngeal swab specimens or by molecular diagnostic test from blood.
3. Male donors, or female donors who have been pregnant, or female donors who have been tested since their most recent pregnancy and interpreted as negative for HLA antibodies.

How many patient can be treated with plasma from a donor?

One person’s donation of plasma can produce two doses of the material needed for transfusions. Scientist say that a person only needs one transfusion to get enough antibodies to fight a virus.

CONCLUSION

From present study convalescent will be an effective against COVID-19, according to the study described encouraging results when it was used in the five critically ill patients who had both COVID-19 and acute respiratory syndrome. all five patient in study recovered.

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