

Review Article

Therapeutic Plasma Exchange for COVID-19 Patients

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ABSTRACT

Corona virus 2019 could be a pandemic with no specific therapeutic agent and substantial mortality. It's critical to search out new treatment to work out whether convalescent plasma transfusion beneficial within the treatment of critically ill patient with severe acute respiratory syndrome. Administration of convalescent plasma containing neutralizing antibody was followed by improve in their clinical status. We still don't have drug or vaccines that specially target this vile virus. Hence, the requirement to seek out alternative therapeutic option is to optimize recovery and reduce the viral load because of COVID-19. Convalescent plasma therapy may be a potential therapeutic option being explored all over the globe. In this study, that mentioned the utilization of plasma therapy. The plasma collected from convalescent COVID-19 patients contains neutralizing antibodies which show potential benefit in reducing viral load ...improvement in clinical symptoms like fever, cough and Dyspnoea. Lack of huge scale clinical trials on plasma therapy may be a major shortcoming before this therapeutic modality starts being extensively used.

Keywords: Plasma therapy, COVID-19 & Plasma therapy, History of plasma therapy

1 Introduction

When a pathogen like novel corona virus infects, our system produces antibodies. The therapy like blood transfusion, harvest the antibody from recovered patient and ingest into a sick person helped by the antibody [1]

Several countries, including India, are seriously viewing plasma therapy as a possible treatment for Covid-19, the disease caused by the novel corona virus. Plasma therapy uses blood donated by recovered patients to introduce antibodies in those under treatment. We take a glance at what convalescent plasma therapy is, the advantages and risks involved within the potential treatment, what past research it, and more. Says about it, and more. [3]

As Covid-19 continues to wreak havoc across the world, scientists are racing to develop antidotes for the new corona virus, which began infecting humans late last year. Scientists and researchers are exploring various avenues to come up with medical treatments that may fight the novel corona virus. One such treatment that's focused straight away is Convalescent Plasma Therapy. [2]

After China and also the US, India has given a plow ahead for framing a protocol to conduct a run for convalescent plasma therapy. The therapy has been used experimentally within the past so has become a ray of hope within the fight against the novel corona virus pandemic.

The convalescent plasma therapy aims at using antibodies from the blood of a recovered Covid-19 patient to treat those critically plagued by the virus. The therapy may also use to immunize those at a high risk of contracting the virus -- like health workers, families of patients and other high-risk contacts. [1]

This therapy's concept is simple and relies on the premise that the blood of a patient who has recovered from Covid-19 contains antibodies with the specific ability of fighting novel corona virus. The theory is that the Recovered patient's antibodies, once ingested into somebody under treatment, will begin targeting and fighting the novel corona virus within the second patient. It's a precautions and not a treatment for the COVID-19 disease. [3]

2 What are antibodies?

Antibodies are one of the front-line immune reaction to an infection by a microbe. They're particular form of protein secreted by immune cells called B lymphocytes once they encounter an invader, like a unique corona virus. The system design antibodies that are highly specific to every invading pathogen. A specific antibody and its partner virus are made for each other. [2]

3 How the treatment is given

Blood is drawn from a person who has recovered from COVID-19 sickness. The serum is separated and screened for virus neutralizing antibodies. Convalescent serum, that is a humor obtained from one who has recovered from an infectious disease and particularly rich in antibodies for that pathogen, is then administered to COVID-19 patient. The sick acquires passive immunization. Potential donor would be examined before the blood serum is extracted and given to a sufferer. First, the swab test must be negative and therefore the potential donor has got to be declared as cured. Then the recovered person has to wait for fortnight. Or else the potential donor should be asymptomatic for a minimum of 28 days. Either of the two is mandatory [2].

4 How convalescent Plasma therapy works

The convalescent plasma therapy uses antibodies developed within an infected person while he/she is infected with the novel corona virus. These antibodies are developed in a patient as a part of the body's natural immune reaction to a foreign pathogen or during this case, the novel corona virus. These antibodies are highly specific to the invading pathogen and then, work to eliminate the novel corona virus from the patient's body.

Once the patient has recovered, they donate their blood so their antibodies may be accustomed treat other patients. The donated blood is then checked for the presence of the other disease-causing agents like hepatitis B, hepatitis C, HIV etc. If deemed safe, the blood is then taken through a process to extract 'plasma', the liquid part of the blood that contains antibodies. The antibody-rich plasma, once extracted, is then ingested into the body of a patient under treatment. A sufficient amount of antibody must be administered. When give to a susceptible person, this antibody will circulate within the blood, reach tissues and supply protection against infection. Depending on the antibody amount and composition, the protection conferred by the transferred immunoglobulin can last from week to month.[1]

5 How is it different from vaccination?

This therapy is akin passive to immunization. When a vaccine is administrated, the immune system produces the antibodies. Thus, in an exceedingly later date, when the vaccinated person is infected by that pathogen, the immune system releases the antibodies and neutralizes the infection. Vaccination provides lifelong immunity. in the case of passive antibody therapy, the effect lasts only up to the time the antibodies injected remain the bloodstream. The protection given is temporary.[2]

6 Plasma therapies and COVID-19

The epidemic of severe acute respiratory syndrome corona virus originating in Wuhan, China has rapidly spread worldwide. As of 24 March, 2020 China has reported 81,767 cases with 3,281 deaths and therefore the WHO declared corona virus disease 2019 a pandemic. As of 18 March, 2020, cases were reported in approximately in 195 countries. No specific therapeutic agent or vaccine for COVID-19 are available several therapies are under investigation but the antiviral efficacy of these drug isn't yet known. The utilization of Convalescent plasma was recommended.

Treatment of severe infection with convalescent plasma was associated without reduce respiratory tract viral load, serum cytokines response and mortality. In other study involving 80 patients either SARS, administration

of Convalescent plasma was associated with a higher rate of hospital discharge at day 22 from symptom onset compared with patient who didn't receive convalescent plasma. Accordingly, these finding raise the hypothesis that use of Convalescent plasma transfusion could be beneficial. 10 critically ill COVID-19 patients were subject to convalescent plasma therapy the trial showed some improvement in patient condition.

The purpose if this study was to described initial clinical experience with convalescent plasma transfusion administered to critically ill patient with COVID-19.[3]

7. Conclusion

In this preliminary uncontrolled case critically ill patient with COVID-19 and ARDS administration of Convalescent plasma containing neutralizing antibody was followed by improvement in the patient clinical patient.

References

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