



PLASMA THERAPY IN COVID-19 PANDEMIC

Dr Sumeet Narain*	Junior Resident, Department of Pathology, Maharani Laxmi Bai Medical college, Jhansi, Uttar Pradesh, India. *Corresponding Author
Dr Mayank Kumar Singh	Professor and Head, Department of Pathology, Maharani Laxmi Bai Medical college, Jhansi, Uttar Pradesh, India
Dr Dvijendra Nath	Principal And Dean, Government medical College, Jalaun, Uttar Pradesh, India.

ABSTRACT The novel beta- CoVs corona virus (2019- nCoV) has been casually linked to severe respiratory infections in humans. Up to date, no specific treatment has been recommended for SARS-CoV-2 infection except for meticulous supportive and preventive care. Improving plasma has demonstrated its viability as a potential treatment in patients with MERS- CoV,4 H1N15 and H5N1 avian u5 and SARS-CoV earlier. Plasma exchange particularly offers advantage on multiple levels by expelling inflammatory cytokines, stabilizing endothelial membranes, and resetting the hypercoagulable state. This article discusses about the various prospects of using plasma therapy in patients suffering with covid-19 infection.

KEYWORDS : Plasma Therapy ; Covid-19

PLASMA THERAPY IN COVID-19 PANDEMIC

The novel beta-CoVs corona virus (2019-nCoV) originating from the province of Wuhan, China, has been casually linked to severe respiratory infections in humans.[1]

Up to date, no specific treatment has been recommended for SARS-CoV-2 infection except for meticulous supportive and preventive care. [2] Throughout the decades, improving plasma has demonstrated its viability as a potential treatment in patients with MERS-CoV,4 H1N15 and H5N1 avian u5 and SARS- CoV. Antibodies contained in the convalescent plasma will stifle infections. [13]

Huang et al [3] reported about the regular complexities of covid-19 acute respiratory distress syndrome, trailed by anemia, acute heart injuries, and secondary infections. For the symptomatic treatment, empirical antibiotics, antiviral therapy (oseltamivir), and systemic corticosteroids have been used. Invasive mechanical ventilation have been additionally utilized in intractable hypoxemia.[4]

Remdesivir was used by Holshue et al[5] in treating covid 19 patients and accomplished great outcomes. Furthermore to antiviral therapy, neuraminidase inhibitors, RNA synthesis inhibitors, and Chinese traditional medicine could likewise be utilized in treatment of covid-19 as postulated by Lu[6] but its efficacy still needs to be verified by further research.[7]

Management of critical SARS-CoV-2 infection is not different from management of most viral pneumonia causing respiratory failure. WHO interim guidelines for the management of suspected COVID-19 suggest administering veno-venous ECMO Extracorporeal membrane oxygenation (ECMO) to eligible patients with COVID-19- related acute respiratory distress syndrome (ARDS) in expert centers with sufficient case volumes to ensure clinical expertise. [8]

One another study by Ivan FN Hung et al [8] suggested that 1 dose of convalescent plasma with NAT of $\geq 1:160$ was effective in diminishing mortality, respiratory tract viral load, and serum level of cytokines. This isn't sudden in light of the fact that critically ill patient with hyperinflammatory avian flu A(H5N1) infection contamination had quickly reacted to 600 mL of convalescent plasma with NAT of 1:80. study by Ivan FN Hung et al has demonstrated that convalescent plasma treatment may have had a place in the treatment of patients with severe H1N1 2009 infection. The treatment adequately decreased the viral burden and dampened the cytokine reaction with diminished mortality.[8]

The consequences of study by Bin Zhang et al show gaining strength plasma may be a potential treatment for fundamentally debilitated patients tainted with SARS-CoV-2 as they observed no authentic disagreeable reactions related with the transfusion of recovering plasma. [9]

China's state-owned medical products maker is gathering plasma from

the blood of individuals who have recovered from the novel corona virus after finding it helped critically ill patients. It claimed that those getting the treatment improved within 24 hours, with decreased inflammation and viral loads alongside better oxygen levels in the blood.[10]

Plasma exchange particularly offers advantage on multiple levels by expelling inflammatory cytokines, stabilizing endothelial membranes, and resetting the hypercoagulable state.

By and by, treatment for sepsis and ARDS spins around early antimicrobials, source control, and "supportive care." This outbreak should serve as a force to investigate therapies focusing on the pathways that lead to the morbidity and mortality associated with these syndromes. Therapeutic plasma ex-change shows promise and randomized preliminaries must be intended to research further. [11, 12] To utilize plasma for treatment, a neutralization test is proposed as the ideal test for surveying appropriate donor or plasma. However, a few investigations indicated that ELISA IgG associates well with neutralization titers in MERS cases so it may be an appropriate screening test for plasma donation. [14,15]

There can be constraints for the use of convalescent plasma as number of antibodies administered to each patient is not standardized. Finally, convalescent plasma generally continues with different medications, such as antiviral agents and steroids, which can establish the connection between convalescent plasma and antibody, confounding the results. [16]

REFERENCES

1. Ceraolo C, Giorgi FM. Genomic variance of the 2019 - nCoV coronavirus. *J Med Virol.* 2020;92: 522-8.
2. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical 499 characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet.* 2020;395:507-13.
3. Huang et al . Clinical features of patients infected with 2019 novel coronavirus in whuan, china. *The Lancet* 2020;395(10223):497-506
4. Michelle L. First case of 2019 Novel coronavirus in the United States . *N engl J Med.* 2020;382(1):929-36
5. Hongzhou Lu. Drug treatment options for the 2019-new coronavirus (2019-ncov). *BioScience Trends.* 2020;14(1):69-71
6. Sun P, Lu X, Xu C, Sun W, Pan B. Understanding of COVID - 19 based on current evidence. *J Med Virol.* 2020;1-4.
7. Ramanathan K, Antognini D, Combes A, Paden M, Zakhary B, Ogino M, et al. Planning and provision of ECMO services for severe ARDS during the COVID-19 pandemic and other outbreaks of emerging infectious diseases. *Lancet Respir Med.* 2020;2600(20):1-9.
8. Hung, I F et al. Convalescent Plasma Treatment Reduced Mortality in Patients With Severe Pandemic Influenza A (H1N1) 2009 Virus Infection. *Clinical Infectious Diseases.* 2011;52(4): 447-56.
9. Zhang, B. et al . Treatment with convalescent plasma for critically ill patients with SARS-CoV-2 infection. *Chest.* 2020;1-11
10. Bloomberg. China finds promising coronavirus treatment in blood plasma. *Fortune.* February 14, 2020. <https://fortune.com/2020/02/14/ china- coronavirus-treatment-blood-plasma-recovered-patients/>.
11. Keith P, Day M, Perkins L, Moyer L, Hewitt K, Wells A. A novel treatment approach to the novel coronavirus: an argument for the use of therapeutic plasma exchange for fulminant COVID-19. *Crit Care.* 2020;24(1):1-3.
12. Chen L, Xiong J, Bao L, Shi Y. Convalescent plasma as a potential therapy for COVID-

19. Lancet Infect Dis 2020;20(4):398-400.
13. Choe PG, Perera RA, Park WB, Song KH, Bang JH, Kim ES, et al. MERS-CoV Antibody Responses 1 Year after Symptom Onset, South Korea, 2015. *Emerg Infect Dis* 2017;23(7):1079-84.
14. Ko JH, Seok H, Cho SY, Ha YE, Baek JY, Kim SH, et al. Challenges of convalescent plasma infusion therapy in Middle East respiratory coronavirus infection: a single centre experience. *Antivir Ther* 2018;23(7):617-22.
15. Ahn JY et al. Use of convalescent plasma therapy in two COVID-19 patients with acute respiratory distress syndrome in Korea. *J Korean Med Sci*. 2020;35(14):1-8.