

## COVID-19: A Short Review on Possible Treatments

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**Abstract:** The disease causes respiratory illness (like the flu) with symptoms such as a cough, fever, and in more severe cases, difficulty in breathing. As coronavirus (COVID-19) can be spread from person to person, isolation restricts the movement of someone who is ill to prevent the spread elsewhere. Coronavirus disease spreads primarily through contact with an infected person when they cough or sneeze. It also spreads when a person touches a surface or object that has the virus on it, then touches their eyes, nose, or mouth. It takes 2-14 days for the symptoms to appear in which the first symptom is fever. The possible treatments of COVID-19 include anti-inflammatory treatments and passive antibodies.

**Keywords:** COVID-19, cytokines, immunity, antibody

### I. INTRODUCTION

Coronavirus disease 2019 (COVID-19) is arguably one of the most infectious disease discovered in the recent years. It is caused by the virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)(Su et al., 2020). It was first identified in the Wuhan district of Hubei province in China and since then it is spreading over the entire world, resulting in the 2019-20 coronavirus pandemic (Lian et al., 2020). COVID-19 infection affects two categories of people the most: (A) people in age group of above 50 years old(Tian et al., 2020); (B) age group of less than 6 months old(Zeng et al., 2020). Someone under 50 years old who is not infected with COVID-19, can be the passive carrier to spread the virus. COVID-19 infection is generally transmitted by the infected person by either coughing or sneezing and is contracted by others by inhaling the virus either through mouth or nose. These two processes need not to happen at the same time as the virus can survive in the outer atmosphere for multiple hours. So, to get infected one must get in contact with any infected substance (not necessarily the infected person) and then transfer the virus into the body through mouth or nose(Zuo et al., 2020). After contracting the virus, generally the subject starts to show the symptoms in 2 to 14 days with an average of 5 days (Linton et al., 2020)which commonly includes fever, cough, and shortening of breath. The less common symptoms include muscle pain, sputum production, and sore throat (Su et al., 2020).Although majority of the cases shows only mild symptoms, in some cases, this infection can result in severe pneumonia and multi-organ failure.

#### **How to avoid COVID-19 spread:**

- Washing the hands properly and frequently (at-least for 20 seconds).
- Avoid touching your mouth, nose, eyes etc.
- Avoid close contacts with people.
- Stay at home if you feel sick.
- Cover coughs and sneezes.
- Clean and disinfect frequently used things every day. This includes tables, doorknobs, light switches, countertops, handles, desks, phones, keyboards, toilets, faucets, and sinks.

#### **Laboratory tests**

At present, the most reliable diagnosis of the COVID-19 infection can be done by Real Time Polymerized Chain Reaction (RT-PCR)(To et al., 2020). In the initial stage of the disease, leukopenia and lymphopenia can be a signature as they are the characteristic of SARS-CoV-2 infection. However, 25-30% of the cases presented with leucocytosis(Liu et al., 2020). Increase in the activity of transaminases (ALT and AST), lactate dehydrogenase (LDH), and creatine phosphokinase (CPK) increased myoglobin and sometimes troponin has also been observed in the infected individuals. C-reactive protein (CRP) levels has been observed to increase in most of the cases while procalcitonin levels remained normal(Liu et al., 2020). In the case of severe infections, increased lactate levels, leucocytosis with agranulocytosis, and increased D-dimer and creatinine levels has been observed. Patients developing severe infections were found to have high levels of cytokines {IL-2, IL-7, IL-10, GSCF, IP10, MCP1, MIP1a and tumor necrosis alpha (TNF- $\alpha$ )} and were treated in intensive care units (ICU) but they were not present in the patients with mild infections(Sarzi-Puttini et al., 2020).

## Possible treatments:

### *Anti-cytokine storm*

In the later stages of severe COVID-19, cytokine storm, a life-threatening medical condition, can create complications (Sarzi-Puttini et al., 2020). As Ibuprofen is the well-established non-steroidal anti-inflammatory drug (NSAID) which can neutralize the cytokines from the lungs and helps reducing inflammation, it can be helpful in this case (Day, 2020). There are also evidences of anti-cytokine storm properties in hydroxychloroquine (Gautret et al., 2020).

Cytokine storm has been thought to be the cause of death in some affected people can be diagnosed with a serum ferritin blood test and steps can be taken to counter such developments (Wu & Yang, 2020). For the treatment against cytokine release syndrome FDA approved The interleukin-6 (IL-6) receptor antagonist (Bennardo et al., 2020). A study on "a human antibody that may prevent the activity" of IL-6 was announced by the The Feinstein Institute of Northwell Health.

### *Passive antibody therapy*

A non-vaccine method of immunization is being investigated in which the antibodies produced by the immune system of those who have recovered from COVID-19 via transfer of the donated blood (Chan et al., 2020). This strategy was tried for SARS. An anticipated mechanism of action by which passive antibody therapy can mediate defence against SARS-CoV-2 is Viral neutralization. On the other hand, the possible mechanisms include antibody-dependent cellular cytotoxicity and/or phagocytosis, may be helpful. One another form of passive antibody therapy (Shanmugaraj et al., 2020), for example, using monoclonal antibodies, are in development. 'Convalescent serum' production, which consists the liquid portion of the blood from patients who has recovered from this infection already, and contains antibodies specific to this virus, could increase faster implementation (Chan et al., 2020).

## II. CONCLUSION

There is ongoing research on COVID-19, and it is expected to have a particular treatment for this type of infection soon. Until the treatment is in the market which can actually cure people, the best way is to boost our immunity by eating healthy which can naturally avoid COVID-19 infection. The possible treatment may be the NSAIDs which can neutralise the inflammatory markers and cytokines such as TNF- $\alpha$ , IL-6, IL-1 $\beta$  etc.

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