A Brief Outlook on Possible Available Solutions, Therapies and Suggestions for COVID-19

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Abstract: Background: The WHO has declared COVID-19 as a global pandemic. New cases are being added every day, as the case count in the United States is increasing to the maximum. No drugs or biologics are yet found to be effective for the prevention or treatment of COVID-19.

Objective: To discuss the possibilities of available treatments.

Materials & Methods: Brief outlook is undertaken over the past issues available over similar situations that occurred with respect to the current scenario and perspectives.

Results: There can be various possibilities in the form of convalescent plasma therapy. The known drugs such as HIV drugs, anti-malarial medicines, and antiviral compounds can serve as a suggestive option.

Conclusion: Until a validated medicine or vaccine is sorted out for Covid-19, we need to take natural immune-boosters, along with precautionary steps, social distancing, and other preventions as instructed for the benefit of everyone with an optimistic mind and attitude.

Keywords: COVID, pandemic, antibiotics, therapy, virus, immune.

1. INTRODUCTION

Coronavirus disease 2019 or COVID-19 is the illness produced by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2, which was first identified due to respiratory illness cases in Wuhan City, China [1]. On January 30, 2020, the WHO declared the COVID-19, a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic. New cases are being added every day, as the case count in the United States is increasing to the maximum. No drugs or biologics are yet found to be effective for the prevention or treatment of COVID-19 [2, 3]. All apart from taking the preventive measures and social distancing, we can take immune-boosters to empower our immune system. No specific treatments for COVID-19 exist right now. However, some of the precautionary measures recommended to help with COVID-19 are to take enough rest, stay well hydrated, and take medications to relieve fever and aches and pains [4, 5]. Many people are asymptomatic. The case fatality rate is estimated to range from 2 to 3%. Diagnosis is performed by the demonstration of the virus in respiratory secretions by special molecular tests. The world is now desperate to find effective treatments. More than 200 clinical trials of COVID-19 treatments or vaccines are running throughout the world. The drugs being tested range from flu treatments to failed ebola drugs, and malaria treatments [6, 7]. In the meantime, scientists are working hard to develop effective treatments. Therapies that are under investigation include drugs, used as anti-malarial and for autoimmune diseases; antiviral drugs that were developed for other viruses, and antibodies from people who have recovered from COVID-19 [8, 9]. There is no consensus on the types of pharmacological therapy which may be effective for SARS. In general, since the definitive laboratory diagnosis of SARS may only be made 3-5 days after symptoms are visible, antibiotics can be used in the presence of pulmonary infiltrates. Numerous antiviral agents, immunotherapies, and vaccines are being reviewed in this article, which can be developed as potential therapies, as shown in Fig. 1 [10].

1.1. Antibiotics

Antibiotics are prescribed by most physicians to SARS patients on initial presentation before microbiological confirmation is obtained, although not active against SARS-CoV. Antibiotics are administered to both typical and atypical organisms according to published treatment guidelines [11, 12]. Amoxicillin-clavulanate and clarithromycin, or levofloxacin alone are often used as initial treatment for respiratory complications. Broader spectrum antibiotics may be used [13, 14]. Unlike bacteria, viruses lack the ability to reproduce independently and therefore need to enter cells of other host organisms to be able to multiply. As such they are always parasitic, regardless of the host being a human, an animal, a plant or a bacterium. The virus causing COVID-19...
Interferon therapy has shown mixed effects for SARS-CoV and MERS-CoV. SARS-CoV-2 is more susceptible to interferon than the other coronaviruses. The IFNβ subtype seems to be the most adequate for COVID-19 treatment. Interferon treatment is more effective in the early stages of the infection. Investigation of interferon-based COVID-19 treatment seems to be warranted [22, 23]. Type 1 interferons or IFN-I designate a group of cytokines constituting the ubiquitous α and β subtypes, as well as the ε, α, and κ subtypes. They are by-products of various cell types, mainly plasmacytoid dendritic cells, upon reception of viral components by pattern recognition receptors or PRR. IFN-I are thus among the first cytokines produced during a viral infection. They are recognized by the IFNAR receptor present at the plasma membranes, it leads to the phosphorylation of transcriptional factors such as STAT1, where they activate interferon-stimulated genes [24, 25].

1.4. Immunomodulator Therapy

It includes four different aspects, such as:

1.4.1. Corticosteroids & NSAIDS

Corticosteroids may be beneficial if utilized in the early acute phase of infection. Own regulation of ACE2 has previously been implicated in the loss of pulmonary function in SARS-CoV [26]. However, further data also suggested that ACE2 expression is increased through the use of ibuprofen in diabetic patients and in those receiving angiotensin II type-I receptor blockers. Consequently, it was suggested that increased expression of ACE2 in these co-morbid patients could facilitate infection with COVID-19 [27].

1.4.2. Immunoglobulins

Immunotherapy with Intravenous immunoglobulin or IVIg may be used to neutralize COVID-19. However, the efficacy of IVIg would be better if the immune IgG antibodies were collected from patients who have recovered from COVID-19, in order to enhance the chance of neutralizing the virus [28]. These immune IgG antibodies will support against COVID-19 by boosting the immune response in newly infected patients. Pathogens from the plasma of recovered coronavirus patient-derived immune IgG can be obtained by techniques including nanofiltration. Immunotherapy with immune IgG antibodies may be an alternative treatment against COVID. The timing of IVlg administration is important. Patients might not receive much benefit when systemic damage has occurred [29, 30].

1.4.3. Convalescent Plasma

One post-exposure prophylaxis, convalescent or immune plasma has shown some success in China and previously in the cure and therapy of other coronaviruses cases as SARS-1 and the Middle East respiratory syndrome. Current patients who are infected with COVID-19, their plasma might be one way to affect the activity of this virus [31]. It was believed that the neutralizing immunoglobulins in convalescent plasma may be able to decrease viral count, and early stages provision may be more effective [32]. Convalescent plasma is being used as a last resort to improve the condition of patients with SARS. The convalescent plasma therapy uses the antibodies developed in the healed patient against the coronavirus. The whole blood or plasma from such people is taken, and the plasma is then injected in critically ill patients so that the antibodies are transferred. Moreover, several stud-
ies showed lower mortality in patients treated with convalescent plasma. In 2014, the use of convalescent plasma collected from patients who had recovered from the Ebola virus disease was recommended by the WHO as an empirical treatment during outbreaks [33, 34].

1.5. Current Traditional Medicine

China is reportedly using traditional medicine to treat patients with Covid-19 caused by the novel coronavirus. Glycyrrhiza rhizomes, which have both antiviral and anti-inflammatory qualities possess used. On the other hand, the herb Armeniacae semen, which is widely used in respiratory disease. Armeniacae Semen was the most used prescribed herb for the treatment of pediatric asthma [35]. Armeniacae semen was also reported to inhibit Th2 cells, which are important for immune responses, reducing hyper-responsiveness in the airway [36, 37]. A large population of India is using plants for its healing and curative properties together with immunomodulatory potential. Tea twice a day having a combination of Tulsi or Basil, Cinnamon, Black pepper, and Dry Ginger, with fresh lemon juice should be a part of our daily life. Steam inhalation with fresh Mint leaves or Caraway seeds once in a day can also be helpful [38]. A number of medicinal plants, such as Rasayanas, have been claimed to possess immunomodulatory activity, e.g., Withania somnifera, Tinospora cordifolia, and Mangifera indica. They can depress or potentiate the host’s potential to resist infection or to react specifically with a foreign substance [39-41]. Immunosuppressants can help to treat various autoimmune and hypersensitivity issues. Several commonly known plants like Acorus calamus, Allium sativum, Andrographis paniculata, Azadirachta indica, Boerhaavia diffusa, Catharanthus roseus, Centella asiatica, Curcuma longa, Ficus benghalensis, Morus alba, Murraya koenigii, Ocimum sanctum, Panax ginseng, Phyllanthus emblica, Terminalia arjuna, and Zingiber officinale possess immunosuppressants [42-45]. Some of the plants with proven immunomodulatory activity are Viscum album, Panax ginseng, Asparagus racemosus, etc. [46, 47]. Many fruits, such as Avocado and kiwi, have beneficial effects on the immune system [48, 49]. The major effect of the immunomodulator plants is mainly on the macrophages which play a key role in the generation of an immune response [50].

CONCLUSION

In this article, we have reviewed the various treatment modalities and the treatment principles related to the novel coronavirus. It is essentially recommended to stay at home as much as possible, keep a six-foot distance from others, wash hands often, use masks, and protective equipment. The WHO has advised that hand hygiene stations made either with soap and water or with alcohol-based hand sanitizer need to be placed at the entrances of buildings, and in public transports. After efforts being made by medical and research communities and organizations worldwide, we are very much familiar with the current status of therapy of the novel Coronavirus within short time months. However, randomized controlled treatment trials are the need of the hour, which are to be performed to improve our understanding of the most optimal treatment for this new disease. The WHO and other health agencies are reviewing the efficacy of known therapies such as convalescent plasma therapy and drugs to treat COVID-19. The known drugs include a combination of two HIV drugs- lopinavir and ritonavir, antimalaria medicines- chloroquine and hydroxychloroquine and the antiviral compound Remdesivir. The therapeutic potential of immunomodulators from plant products and the Ayurvedic concepts of preventive health care have been highlighted by many researchers. Till a confirm medicine or vaccine is sorted out for Covid-19, we need to take natural immune-boosters, along with precautionary steps, social distancing, and other preventions as instructed for the benefit of everyone with an optimistic mind and attitude.

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CONFLICT OF INTEREST

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REFERENCES


