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Optimal Treatment of COVID-19: Influence of blood Transfusion

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Abstract:*The outbreak of COVID-19 in December 2019 in China and spread to all countries urged the scientist all over the world to find a satisfactory management to stop the outbreak. This includes the quarantine, social distancing among population, and the use of anti-malaria drugs. These attempts resulted in reducing the quick spread of the virus but management of the patients is still in a poor stage. Here we suggest to transfer specific viral antibody from the immune individuals to the COVID-19 patients throughout blood transfusion process. This process transfers the antibodies from the immune individuals to the patients. Then the antibodies begin to attack the virus particles in body of the patients and destroy it. Then the patient recovers. This process is a specific one and has no side effect such as regular medical therapy. I wrote this suggestion on my Home page at Facebook on March 21,2020. Then many countries such as Iran and other countries applies the suggestion. Practical support to this suggestion comes from China where scientists used plasma transfusion to recover five serious COVID-19 patients. Italian physicians announced that COVID-19patients get recovered by applying this method. Daily mail news declared that UK and USA agreed on using blood transfusion from recovered individuals to the patients. At the moment blood/plasma transfusion to COVID-19 patients would be the optimalmanagement to the patients and quarantine and social distancing would be the best management to stop the outbreak.*

Keyword:*COVID-19, optimal treatment, antibody transfusion, blood transfusion*

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I. Introduction

The outbreak of Coronavirus referred to as COVID-19 in the world countries caused many death cases (≥ in1000) in China and (≥ 1500) in Italy[1]. Death cases increase up to 2977. [2]. This outbreak of Coronavirus disturbs the daily life in most countries around the world. Many countries go for quarantine to save the lives of their population. This have reduced the infected cases of the disease. However, the disease is still on the peak season. No changes in the courtiers except the increases in the infected cases.

On the other hand, several attempts have been made to develop successful therapeutic agents for COVID-19 but no tremendous success has been achieved. Few reports brought attention to the possible benefit of chloroquine, a broadly used antimalarial drug, in the treatment of patients infected by the novel emerged coronavirus(SARS-CoV-2)[3]. Additionally, Agostini et al.[4] recommended the use of Remdesivir (GS-5734), a 1′-cyano-substituted adenosine nucleotide analog prodrug as a broadspectrum antiviral activity against several RNA viruses.Remdesivir has been reported to treat the first US case of COVID-19 successfully[5]. Furthermore, the previous anti-malaria, Chloroquine, has been recommended with great potential to treat COVID-19.[6]

Meanwhile, scientists previously confirmed that the protease inhibitors lopinavir and ritonavir, used to treat infection with human immunodeficiency virus (HIV)[7]. It has been found that β-coronavirus viral loads of a COVID-19 patient in Korea significantly decreased after lopinavir/ritonavir (Kaletra®, AbbVie, North Chicago, IL, USA) treatment [8]. As obvious several attempt has been made to successfully decrease the magnitude of a COVID-19 outbreak in the world countries. So far, the successful management of the disease is that the quarantine and social distancing in the population. This has made a tremendous reduction inCOVID-19 outbreak and associated death cases in Germany, Israel, Palestine, Lebanon, Egypt and Yemen. The magnitude of the disease is still on high peak, regardless to the international call of quarantine social distancing. Up to date,there are no successful antiviral treatments for a COVID-19 outbreak.

The above-mentioned reports poorly suppress COVID-19outbreak, or it remains on its primary stages. Accordingly, in this article we suggest blood transfusion from immune individuals to the COVID-19patients. The idea behind this suggestion is that, the blood in the immune individual contains large fraction of specific anti-bodies that can suppress theviral development in the patient. Consequently, the patient is recovered.

Response of population to COVID-19

Among many uncertainties that remain about COVID-19 is how the human immune system responds to infection. Immunity after any infection may range from lifelong and complete to nearly nonexistent. So far, however, only the first glimmers of data are available about immunity to SARS-CoV-2, the coronavirus that causes COVID-19.

Based on the death cases reported byOnder et al.[1], human responses to COVID-19can be subdivide into three main groups as shown in Figure 1.

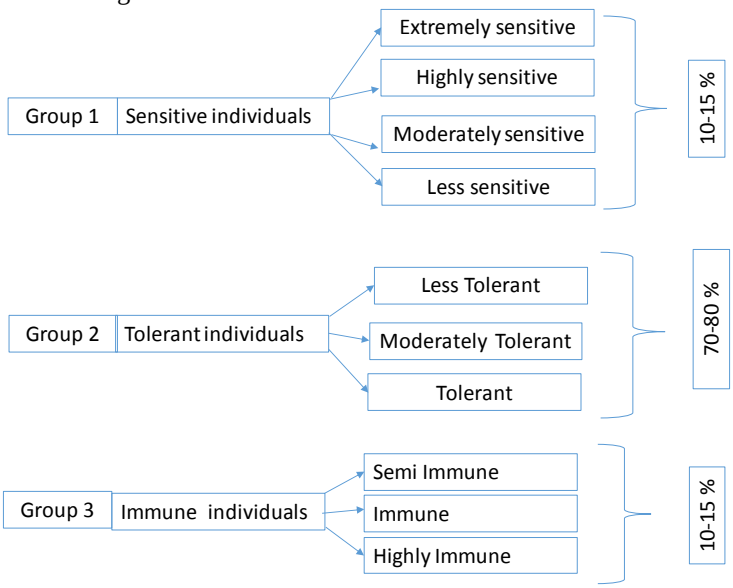

Figure 1. Proposed classification of individuals according to their sensitivity to COVID-19.

Group 1,COVID-19-Sensitive Individuals. This group includes individuals with different age group and those may have chronic diseases such as cardiovascular, viral hepatitis disease, renal failure, diabetic,and cancer disease. The natural immunity in this group is low or at marginal stage due to the side effects of medical treatments during their life spam. This group can be represented by 10-15% of the population. The responses of those individual to COVID-19is nearly similar and can start from infection, and quickly develop to serious injury or damage that makes them needing the intensive care unit. The response of this group to the medical treatment isquite low, consequently may reach a death case very quickly as seen in China and Italy.The individuals in Group 1 can be subdivided to four subgroups as extremely, highly, moderate and less sensitive individuals. The extremely and highly sensitive individuals are the weakest individualswith high age (above 70 years). Those may quickly reach the end of viral infection (death) as seen in Italian cases [2].

Group 2,COVID-19-Tolerant Individuals. This group includes the majority of individuals at any community with different age groups and can be subdivided to three subgroups as less tolerant, moderately tolerant and tolerant individuals (Figure 1). The natural immunity in these individuals is above marginal and below that of immune group (see below). This large immunity enables them to defeat COVID-19, in some cases those individuals become morbid. The morbid cases respond positively to the medical treatment and recover due the initial immunity they have. This group can be donated by 70-80% of the population.Individuals in this group can produce anti-body but it is not enough to completely suppress the development of viral infection. Accordingly this group may become sick and in due time recoverdue to medical treatment and the development of antibody in their blood.

Group 3, COVID-19-Immune Individuals. This group includes individuals have large natural or acquired immunity that enable them to stop the development of viral infection. No pathological symptoms/signs can appear on those individuals as seen in some COVID-19patients in Palestine mainly in Gaza. This group includes different ages. In fact, the immunity system on those individuals can produce large fraction of anti-body that can destroy or stop the development ofCOVID-19. This group can be donated by 10-15% of the population. The blood of these individual can be a source of antibody to COVID-19. This group can be subdivided into three subgroups, semi immune, immune and highly immune individuals. This classification is based on the quantity of antibodies they produce in their body.

Characterization of the COVID -19immune individuals (group 3)

The COVID-19-Immune individuals are those living among viral infected patients, and may be characterized by positive result to COVID -19 test but no appearance of pathological symptoms or signs in due time.

Additionally, the medical staff that have a history of COVID-19 patient treatment that do not have a pathological symptoms but have a positive response to COVID-19 test. Moreover, the COVID-19 recovered patient may become an immune individual or have enough antibody against COVID-19.

Currently,COVID-19 infected patients in Palestine have no pathological symptoms,regardless the fact that they have a positive result to COVID-19 test since 15 days ago. Those individuals are immune individuals and have been released from the hospital to home quarantine.

Based on the data published by Onder et al, it can be concluded that immune individuals are those in the age group below 30 years old. This conclusion is in agreement with Onder et al.[1] who reported the majority of COVID-19 deaths above 30 years old in China and Italy.This observation indicates that individuals below 30 years old can be a source on COVID-19antibodies, and doses of their blood can be transfused as a medical treatment to the patients.

Furthermore, serological method can be used to characterize the level of immunity among groups throughout identifying antibodies of COVID-19 in serum and plasma in the immune individuals.

So far, serological method can be used to identify antibodies of COVID-19 in serum and plasma in individuals. This method includes agglutination and precipitation techniques. So far, agglutination is based on reaction of particular (insoluble) antigen with antibodies, whereas precipitation involves reaction of colloidal (soluble) antigen and antibodies. This method has successfully been usedto determine anti Rh antibodies in pregnant women (diagnosis of hemolytic disease of newborn) and in, i.e. antibodies screening against Treponema pallidum, the main cause of syphilis[9]. Furthermore, theCOVID-19immune individuals may be diagnosed by having a normal value of C-reactive protein (CRP) whereas the patients of COVID-19 may have a high value of CRP as shown by other patients[10-11].

Accordingly, blood volume (250-500 ML) from the COVID-19immune individuals can be transfused to the COVID-19 patients. In this case, the anti-bodies in the transfusedblood may destroy the viral particles in the patient or enhance the immunity system to develop enough antibody to cure the patients.

Responses to the idea of blood transfusion toCOVID-19 patients

Due to the outbreak of for COVID-19, I wrote a post on my Homepage at Facebook on March 21, 2020,the use of blood transfusion as an optimal treatment for COVID-19 patients. A copy of my post is shown in Figure 2 in Arabic language (Our language). Three days following my post on Facebook, exactly on March 24, 2020, New York City Researchers released on nature,the top scientific Journal in the world, that antibody-rich plasma could keep people out of intensive care. How blood from coronavirus survivors might save lives. Additionally, four days following my post on Facebook, (On March 25, 2020), an official News Paper, DONIA-AL-WATAN indicated that UK and USA agree to put blood transfusion among medical treatment to COVID-19. More details on the news are shown in the link in Figure 2.

Additionally, on March 27, 2020, a new application of blood transfusion was conducted in Iran as shown in the Facebook page Figure 2. Text is written in Arabic, the local Language.

On the other hand, plasma transfusion showed a great progress in curing the COVID-19 patients. This information was published in www.youm7.com on 31-3-2020. More details are shown the link in Figure 2.

So far, the photos in Figure2 clearly show great response of the international community to the idea of blood transfusion. In fact, blood transfusion process transfers the specific viral antibody that produced in the immune individual body to the patient body. These antibodies can stop the development of the viral activity in the patient. Consequently, the patient is recovered. So far anti-body antigen reaction has successfully been employed to produce antibodies for bacterial diseases. Because viruses are DNA/RNA particles not microorganisms, it is not possible up to the moment to produce external antibody and to use it to treat the COVID-19patients. From serological point view, it is too early to design a suitable and effective antibody. So that, the easiest way to treat COVID-19 patients is to transfer blood from the immune individuals to the patients. In this case the transfused blood contains antibodies that can suppress the viral development. The amount to antibodies can be tailored to suit the status of the patient. So far these antibodies have no side effects if given in the appropriate dose and time.

Moreover, in Figure 3 we showed the successful use of plasma as a potential treatment for COVID-19 patients. Additionally, blood from recovered individual was announced as a potential medical treatment for COVID-19 patients. Our suggestion, blood transfusion, agrees with recent report that used convalescent plasma transfusion as a potential medical treatment of critically ill patients with severe acute respiratory syndrome

coronavirus 2 (SARS-CoV-2) infection. In this report, the dose of plasma was 400 ml plasma/ patient. All the patients were recovered form COVID-19.[12]

Figure 2. Antibody transfusion throughout blood in different countries. Where A,B,C, D and E are the 1st announcement of using blood as a potential treatment of COVID-19 patients, on home page at Facebook on March 21, blood transfusion in different country as announce by alwatanvoice on March 25, application of idea on Iran on March 27 and talking about the application of the idea on Israel on March 30-2020

So far, providing plasma as a treatment to the patients can be a specific treatment due to its anti-viral contents, but providing blood as a treatment, may be better than providing only plasma because blood contains plasma and can improve the oxygen carrying capacity of the blood inCOVID-19 patient, who is in a bad need for a ventilator during the treatment process.

Figure 3. Successful application to blood/plasma transfusion among COVID-19 patients in China, (photos marked A,B and C) and USA (photo marked D,E). Photos A,B, C and D were obtained from www.youm7.com+ details shown in the box; Photo E was obtained from Science. Details in the box.

In addition, providing blood as potential treatment to COVID-19 patients is a kind of a specific engineering process of viral antibody. This is in accords with a previous report that engineered antibodies for any infectious diseasethat leading to further advantages and successes in patient treatment[13].Moreover, transferring blood containing the required viral antibodies can safely cured the patient with less/no side effects. So far using antibodies isolated from the blood of immune individuals may become the new backbone of pharmaceutical industry. It has been shown that monoclonal antibody therapeutics have been approved for over 30 targets and diseases, most commonly cancer[14].

Guideline for blood transfusion from immune individuals to COVID-19patients

1. Genetic matching in the blood groups
2. Transfused blood should be free from any type of viral hepatitis and or HIV (HIV is a virus that damages the immune system).
3. Allergy test for blood receptor.
4. Hemoglobin level of the acceptor should be taken in consideration

Limitations of this suggestion

Although this suggestion provides a fast and optimal treatment for COVID-19patients, some limitationsare still an obstacle toward fast application. These limitations are:

1. It may be difficult now to characterize the immune individuals that their blood have to be used as a source of the required antibodies.
2. Immune and COVID-19patients may belong to blood groups that do not accept blood transfusion such as blood group A and group B.
3. The immune individual may be at a blood level >12 g/dl that does not allow blood transfusion.
4. Immune individual may have a blood born disease

Future developments

From serological point view, it would be possible in the near future to isolate COVID-19 antibody from the plasma or blood using the methods mentioned above and/or other methods. On the other hand, these specific viral antibodies may be isolated in large quantities from the blood of immune individuals, packing them in suitable medical vails and send to the patients elsewhere to recover them soon.

Concluding remarks

The rational of this work is due to the outbreak of COVID-19in December 2019 and neither satisfactory management of patients nor suppression of the disease. The idea behind our suggestionforblood transfusion from immune individuals to COVID-19patients is that the blood of immune individuals have enough antibody that can stop or prevent the development of the viral infection, consequently, the patient is recovered. This idea is successfully tested in China (Ref 12) by successful plasma transfusion to cure COVID-19 patients. Moreover, USA agrees to use blood of recovered patients. It can be concluded that the optimal option new for COVID-19 –patients is a blood/plasma transfusion.

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Conflict of interest

Nothing to report

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