



Editorial

COVID-19 Outbreak: How to Use Current Knowledge to better Treat Positive Patients

 Massimo Bonucci

Department of Integrative Oncology, Nuova Villa Claudia Hospital, ARTOI President, Rome, Italy

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Viral COVID19 infection is causing problems as it is not yet clear how the virus-positive patients can be treated.^[1]

To date, there are still no recognized standard therapies; therefore, health facilities, even from different countries, are using what they are their knowledge to treat their positive patients to get the best results.

As for the virus, we know very well that this microorganism creates a series of damages that are related precisely to the presence of the virus inside the cell; in particular, the damages that come out are given both by the loss of transport activity of red blood cells and by what is our body's response to the presence of the cell infected with the virus (inflammation and cytokine storm).^[2, 3]

We know very well that the virus enters into the cells via cellular receptors. The presence of receptors allows the virus to enter into the cells then it starts to show the consequences of its presence. These infected cells activate an inflammatory response by our body, which is necessary enough to lead a multitude of inflammatory elements around the infected cells. At the same time, therefore, we have a series of immune system cells (neutrophils, monocytes, macrophages, dendritic cells and lymphocytes) that trigger the release of cytokines, edema in the surrounding area, and a cascade of enzymes with thrombus formation.

^[2] The damage caused by thrombosis is mainly due to the small vessels.

By now it has been seen that this mechanism does not occur only at the level of the lungs, which represent the primary site of infection, but also at the level of other organs such as the heart, kidneys, muscles (also found at the level of the retina and brain).^[4]

In Italy, there are currently numerous therapeutic approaches aimed at reducing the abnormal response to the presence of the virus (therapies that are not currently supported by clinical studies and trials, but based on the experience of medical colleagues to combat the damage caused directly by the virus).

One of the therapeutic protocols based on serotherapy seems to begin to give positive results, like using plasma by convalescent patients who have contracted Covid-19 infection and have recovered. The transfusion of convalescent plasma, rich in antibodies against the virus, into infected patients seems to give a reduction, if not a complete remittance, of the symptoms even in a short time. This treatment, based on the introduction, through a plasma, of antibodies developed against the virus, is an anticipation of what the vaccine will do, which in simple terms is a concentrate of antibodies against the virus.^[1, 4] Several Italian hospitals are currently using this protocol. But at the same time a Chinese study showed that the use of convalescent plasma cannot reduce the mortality in critically end stage COVID-19^[5] (probably the best time to give the convales-

Address for correspondence: Massimo Bonucci, MD. Department of Integrative Oncology, Nuova Villa Claudia Hospital, ARTOI President, Rome, Italy

Phone: +39 0661520277 **E-mail:** maxbonucci@tim.it

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cent plasma could be in early stage on infection).

A further therapeutic protocol which is currently giving a satisfactory result is the following mix of drugs:^[6,7]

- Medication that restores the action of red blood cells, in addition to anti-inflammatory action that can reduce edema and the cascade of proinflammatory cytokines
- Antibiotic, always to reduce inflammation
- Antithrombotic drug

This protocol is based on a study and evaluation of the symptoms of virus-positive patients and implemented by the clinical experience by a group of doctors of on Residential Nursing Home in the Brescia area.

Currently, the mix of drugs that have a specific action on the pathology caused by coronavirus consists of:

- a) hydroxychloroquine which, in addition to blocking the loss of oxygen transport of red blood cells, also blocks the mechanism of recall of inflammatory cells.
- b) azithromycin an antibiotic to reduce the charge of bacterial interference as well as a synergistic action with hydroxychloroquine the reduction of inflammatory processes.
- c) low molecular weight heparin, an anti-coagulant drug. This triad gave a great prognostic-therapeutic advantage in coronavirus positive patients.

International literature reports cardiac side effects from the use of chloroquine. These effects did not occur in the protocol considered, probably because of the low daily dose used (400 mg vs. 1200 mg total dose).

The mix of drugs has been used in virus-positive buffer patients, both in symptomatic ones (with mild to a severe manifestation of cough, fever, arthralgias, respiratory difficulty, superficial and deep vein thrombosis) until the end of symptoms, and for the first time also in asymptomatic ones (in which it was, however, a pathological modification of hematological parameters such as C-reactive protein, D-Dimer test, and Lactate Dehydrogenase – LDH- was found) for one week. The result has been exciting. Since the introduction of this protocol, deaths have drastically reduced, patients have had a marked improvement in symptoms, and those who were asymptomatic have not had pathological progression (with normalization of hematological parameters). How can we interpret these results? The

drugs in question reduce the evolution and progression of coronavirus pathology both as regards inflammation of the upper respiratory tract and the formation of thrombotic aggregates. So, in both cases, the disease has not evolved in the most severe forms.

Here is what we can learn from this small examination of results: Medicine does not have a single solution. Medicine is based on the experience of many colleagues who merge specific knowledge that becomes everyone's assets. We all have to collaborate because, in the absence of sharing, there will never be global well-being.

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