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Covid-19 Virus and Eye

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Abstract

It is a minireview about the impact of SARS COVID-19 pandemia on Ophthalmology. Since 1990's this virus was studied and some researchers showed its retinotropism. Nowadays, according to the World Health Organization guidelines, we explain how Italian ophthalmologist and nurses faced the effect of this pandemia on our daily work.

Keywords: *Covid-19, eye, immunology, transmission, vaccine.*

Text

Coronavirus is actually responsible of the pandemia declared by the World Health Organization (W.H.O.) on March 11 2020 (1,2). It is a genetic and viral variant of Severe Acute Respiratory Syndrome (S.A.R.S.). It is responsible of different symptoms such as an acute respiratory distress syndrome (A.R.D.S.) that might lead to fatal events (3). An anti-interleukin (IL-6) receptor monoclonal antibody named tocilizumab (Roche Pharma, Schweiz) may be a possible effective therapy. It was used as a rescue treatment in patients affected by severe interstitial pneumonia (4). Since 1990's there is a model of murine experimental coronavirus retinopathy (ECOR) (5,6). Interestingly virus, independently from the inoculation route into the eye, has a retinotropism. It is located in the inner nuclear layer, photoreceptors, Muller cells and retinal pigment epithelium (RPE). At day 10 it arrives at ganglion cell layer. The infection of the eye seems to have two phases. The first one triggers the immune system while the second is an autoimmune disease.

Tears are an inoculation and possible transmission route for this virus (7,8,9,10). Some viral conjunctivitis may be associated to this virus. That's why Italian ophthalmologist immediately used personal protective equipment (PPE), hygiene and disinfection to avoid virus spread and transmission (11,12). In some settings, such as public first aid department, apart from face surgical masks and gloves there are face shields. To protect slit-lamp biomicroscope it is possible to use X-ray film (11 x 13 inches).

A new technology platform using self-assembling peptide nanofibers tagged with antibodies can be an effective SARS-CoV-2 vaccine, according to a proof-of-concept study published in *Science Advances* on August 7th 2020. The Food and Drug Administration (F.D.A.) approved this vaccine in the U.S.A.. Another possible therapy is the use of monoclonal antibodies, which are in advanced research.

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In memoriam of Colleagues and nurses who passed away during this pandemia.

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