

Is Hydroxychloroquine a Possible Postexposure Prophylaxis Drug to Limit the Transmission to Healthcare Workers Exposed to Coronavirus Disease 2019?

TO THE EDITOR—We read with great interest the study by Yao et al [1] reporting that hydroxychloroquine has better antiviral activity than chloroquine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is associated with a high lung-to-plasma concentration ratio and immunomodulatory effects. Moreover, the authors highlighted that hydroxychloroquine half maximal effective concentration values “tended to decrease with longer incubation times” and that, in the simulation model, the lung trough concentrations were still above the target concentration on day 10 after a 5-day course of hydroxychloroquine.

Besides household contacts, SARS-CoV-2 can be acquired in hospital settings, with healthcare workers (HCWs) attending at invasive procedures on the respiratory tract (ie, intubation, endotracheal tube aspiration, or bronchoscopy) at the highest risk. Accidentally infected HCWs represent an important source of infection during the period that they are asymptomatic or presymptomatic, as they can transmit the virus to household contacts and to patients seeking medical care for reasons unrelated to SARS-CoV-2 infection. For these reasons, we suggest preventive strategies for those accidentally exposed to SARS-CoV-2 such as preexposure or postexposure prophylaxis to avoid viral transmission, as largely accepted for those exposed to other viral agents such as human immunodeficiency virus (HIV) [2].

Chloroquine and hydroxychloroquine are able to inhibit replication at early stages

of viral infection, increasing endosomal pH at the time of virus/cell fusion, as well as impairing the glycosylation of cellular receptors of many viruses including coronavirus [3]. In contrast, no similar effect on early phases of coronavirus infection has been reported for other drugs proposed for SARS-CoV-2 treatment, which are able to interfere only after cell infection, affecting protease cleavage (protease inhibitors) or viral genome replication (remdesivir or ribavirin). These effects of chloroquine on early phases of viral replication permit the attenuation of vertical transmission in an animal model of Zika virus infection, significantly reducing brain viral load, and make cells refractory to SARS-CoV infection in an in vitro model [4, 5].

Hydroxychloroquine, the HIV protease inhibitors (particularly lopinavir), ribavirin, and remdesivir are the most promising drugs proposed for coronavirus disease 2019 (COVID-19) treatment, but currently no drug has been proposed for postexposure or preexposure prophylaxis for those accidentally exposed to SARS-CoV-2 [6].

On the basis of these investigations, we believe that hydroxychloroquine can be effective in preventing respiratory tract invasion in HCWs exposed to SARS-CoV-2 and that hydroxychloroquine administration as a prophylactic agent could be particularly useful for HCWs attending to high-risk procedures on the respiratory tract in COVID-19 patients. Hydroxychloroquine's effectiveness profile, its ability to inhibit lung viral replication for a 10-day period after only a 5-day cycle of therapy, and the large amounts of knowledge in term of safety deriving from its use for malaria prophylaxis and rheumatologic diseases

lead us to recommend its preexposure or postexposure use for those performing procedures at high risk of viral diffusion in patients with COVID-19 pneumonia.

Note

Potential conflicts of interest. The authors: No reported conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

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Clinical Infectious Diseases® 2020

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