

Hydroxychloroquine for prophylaxis and treatment of COVID-19 in health-care workers

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To the Editor,

Providing adequate health care is vitally important during the coronavirus disease 2019 (COVID-19) pandemic to keep morbidity and mortality low. Health-care workers (HCW) are key guarantees for this process, and they must feel safe and adequately protected, which includes reliable prophylactic measures [1].

Hydroxychloroquine (HCQ) could exert antiviral effects, essential for prophylaxis and early treatment of COVID-19, through several mechanisms: (a) endosomal pH increase, which inhibits the passage of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) through the host cells' membranes; (b) inhibition of angiotensin-converting enzyme 2 cell receptor glycosylation, which impedes SARS-CoV-2-receptor binding; (c) blocking the transport of SARS-CoV-2 from early endosomes to endolysosomes, which prevents release of the viral genome; (d) immunomodulation; and (e) limiting the post-viral cytokine storm syndrome [2,3].

We share here the experience of the Bulgarian Cardiac Institute (BCI) regarding the use of HCQ for prophylaxis and treatment of COVID-19 in HCW.

The BCI comprises seven hospitals and eight medical centres, with around 1200 HCW, covering more than two-thirds of Bulgarian territory. Since March 2020, many of our employees have been in close contact with individuals with COVID-19. We offered prophylaxis with HCQ 200 mg daily for 14 days to 204 of them. In all, 76.4% of the group (156 HCW) used HCQ and none of them presented with COVID-19 symptoms. Of the 48 HCW that refused HCQ prophylaxis, three developed symptoms and tested positive for COVID-19.

During the last 7 months, 38 HCW at BCI have tested positive for COVID-19, half of them were symptomatic. We suggest the following treatment regimen as an early home-based therapy for them: azithromycin 500 mg daily; HCQ 200 mg three times a day and zinc up to 50 mg daily for 14 days. Thirty-three (86.8%) of them undertook this treatment, their symptoms disappeared between days 2 and 4, none of them required hospitalization and all had a negative PCR test on day 14. The other five HCW (13.2%) used alternative treatment regimens, none of them including HCQ. Three of them still tested positive at day 14 and two of them required hospitalization.

All HCW (189) treated with HCQ, also took zinc. We performed electrocardiograms at baseline, and on day 3 and day 5 of HCQ treatment using a QTc measurement: baseline QTc was 412 ± 23 ms, day 3 QTc was 429 ± 27 ms and day 5 QTc was 427 ± 31 ms ($p > 0.05$ for all comparisons). We registered a QTc increase ≥ 60 ms in five HCW. QTc increased >470 ms in one male HCW and >480 ms in three female HCW. On all of these occasions HCQ was stopped. We did not register any rhythm disorders.

A possible drawback of HCQ prophylaxis is the risk for selecting resistant microorganisms, as has been described for *Plasmodium* spp. However, at present we do not have any data about SARS-CoV-2 resistance to HCQ [4].

In conclusion, our experience at BCI suggests that HCQ could possibly provide protection against infection with SARS-CoV-2 (prophylaxis), and could, if used early, help to control the COVID-19 infection (treatment).

Based on this experience, we at BCI adopted a new prophylactic strategy for HCW starting from the second half of October 2020. This includes alternative months of HCQ intake (200 mg daily) and months without therapy. We are planning to continue this prophylaxis regimen throughout the autumn, winter and spring months (Fig. 1).

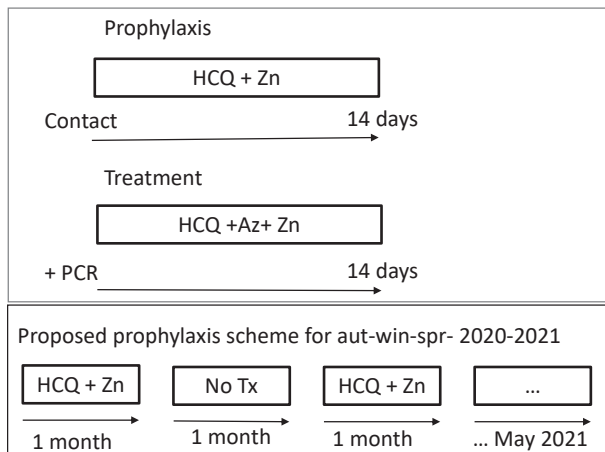


FIG. 1. Use of hydroxychloroquine for prophylaxis and early treatment of COVID-19 (upper panel) and proposed prophylactic scheme for autumn–winter–spring 2020–2021.

Conflicts of interest

There is no conflict of interest.

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