

Hydroxychloroquine linked to increased risk of cardiac arrhythmias

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Since the World Health Organization declared COVID-19 a Public Health Concern of Global Interest on January 30, more than one million have tested positive for the illness in the United States, and more than 62,000 have died. With no FDA-approved treatments available to date, the anti-malarial drug, hydroxychloroquine, has emerged as a potential therapy for the pneumonia associated with COVID-19, with or without the antibiotic azithromycin.

In a brief report published today in *JAMA Cardiology*, a team of pharmacists and clinicians at Beth Israel Deaconess Medical Center (BIDMC), part of Beth Israel Lahey Health, found evidence suggesting that patients who received hydroxychloroquine for COVID-19 were at increased risk of electrical changes to the heart and [cardiac arrhythmias](#). The combination of hydroxychloroquine with azithromycin was linked to even greater changes compared to hydroxychloroquine alone.

"While hydroxychloroquine and azithromycin are generally well-tolerated medications, increased usage in the context of COVID-19 will likely increase the frequency of adverse drug events (ADEs)," said co-first author Nicholas J. Mercuro, PharmD, a pharmacy specialist in infectious diseases at BIDMC. "This is especially concerning given that that patients with underlying cardiac co-morbidities appear to be disproportionately affected by COVID-19 and that the virus itself may damage the heart."

Hydroxychloroquine and azithromycin each can cause an electrical

disturbance in the heart known as a QTc prolongation, indicated by a longer space between specific peaks on an electrocardiogram. QTc prolongation denotes that the heart muscle is taking milliseconds longer than normal to recharge between beats. The delay can cause cardiac arrhythmias, which in turn increases the likelihood of cardiac arrest, stroke or death.

In this single-center, retrospective, observational study, Mercurio and colleagues evaluated 90 adults with COVID-19 who were hospitalized at BIDMC between March 1 and April 7, 2020, and received at least one day of hydroxychloroquine. More than half of these patients also had [high blood pressure](#), and more than 30 percent had diabetes.

Seven patients (19 percent) who received hydroxychloroquine alone developed prolonged QTc of 500 milliseconds or more, and three patients had a change in QTc of 60 milliseconds or more. Of the 53 patients who also received azithromycin, 21 percent had prolonged QTc of 500 milliseconds or more, and 13 percent experienced a change in QTc of 60 milliseconds or more.

"In our study, patients who were hospitalized and receiving hydroxychloroquine for COVID-19 frequently experienced QTc prolongation and adverse drug events," said co-first author Christina F. Yen, MD, of BIDMC's Department of Medicine. "One participant taking the drug combination experienced a potentially lethal tachycardia called torsades de pointes, which to our knowledge has yet to be reported elsewhere in the peer-reviewed COVID-19 literature."

In 2003, preliminary data suggested hydroxychloroquine may be effective against SARS-CoV-1, a fatal but hard-to-transmit respiratory virus related to the [coronavirus](#) that causes COVID-19. More recently, a small study of patients with COVID-19 appeared to benefit from the [anti-malarial drug](#). Subsequent research, however, has failed to confirm

either finding. In light of their data, Gold and colleagues urge caution and careful consideration before administering hydroxychloroquine as treatment for COVID-19.

"If considering the use of hydroxychloroquine, particularly combined with azithromycin, clinicians should carefully weigh the risks and benefits, and closely monitor QTc—particularly considering patients' comorbidities and concomitant medication use," said senior author Howard S. Gold, MD, an infectious disease specialist at BIDMC and an assistant professor of medicine at Harvard Medical School. "Based on our current knowledge, [hydroxychloroquine](#) for the treatment of COVID-19 should probably be limited to clinical trials."

More information: Nicholas J. Mercurio et al, Risk of QT Interval Prolongation Associated With Use of Hydroxychloroquine With or Without Concomitant Azithromycin Among Hospitalized Patients Testing Positive for Coronavirus Disease 2019 (COVID-19), *JAMA Cardiology* (2020). [DOI: 10.1001/jamacardio.2020.1834](https://doi.org/10.1001/jamacardio.2020.1834)

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