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Case Report and Review of the Literature

Decreased Heart Rate Variability in COVID-19

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ABSTRACT

On March 12, 2020, the World Health Organization (WHO) announced that the coronavirus disease 2019 (COVID-19) outbreak had become a pandemic. COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which primarily infects the lower airways and binds to Angiotensin-Converting Enzyme 2 (ACE2) on alveolar epithelial cells. ACE2 is widely expressed, not only in the lungs but also in the cardiovascular system. Therefore, SARS-CoV-2 can also damage the myocardium. We analysed three COVID-19 cases that resulted in death and found that either COVID-19 or antiviral drugs could affect the coupling between the autonomic nervous system and the sinus node, thus affecting heart rate variability and preventing the heart rate from rising in response to the increase in body temperature. Early detection of the preclinical phase of cardiac autonomic dysfunction may help determine patients in need of aggressive treatment and control of cardiovascular risk factors. Antiviral drugs should be used with caution in patients with heart injury.

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