EP News: Clinical

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Guidance for cardiac electrophysiology during the coronavirus (COVID-19) pandemic from the Heart Rhythm Society COVID-19 Task Force

Lakkireddy et al (Heart Rhythm April 1, 2020;https://doi.org/10.1016/j.hrthm.2020.03.028, PMID 32228309) summarized the available evidence and provided recommendations for electrophysiologists related to coronavirus 2019 (COVID-19) in a consensus document from the Heart Rhythm Society, American College of Cardiology, and American Heart Association. They noted that electrophysiologists, like all cardiologists and other health care workers, have been affected personally and professionally by this global catastrophe. The authors identified the potential risks of exposure to patients, allied health care staff, industry representatives, and hospital administrators. They reviewed the available evidence related to COVID-19 and cardiac arrhythmias. Recommendations related to triage based on acuity and patient comorbidities were provided. Guidance was also given for managing invasive and noninvasive electrophysiology procedures, clinic visits, and cardiac device interrogations. Finally, the authors discussed resource conservation and the role of telemedicine in remote patient care along with management strategies for the affected patients.

Urgent guidance for navigating and circumventing the QTc-prolonging and torsadogenic potential of possible pharmacotherapies for COVID-19

Giudicessi et al (Mayo Clin Proc March 25, 2020;https://doi.org/10.1016/j.mayocp.2020.03.024, PMID pending) provided guidance on use of drugs such as hydroxychloroquine and lopinavir/ritonavir with the potential for unwanted QT interval prolongation, and a risk of drug-induced sudden cardiac death during the global COVID-19 pandemic. With the possibility that a significant proportion of the world's population could soon receive COVID-19 pharmacotherapies with torsadogenic potential for therapy or postexposure prophylaxis, this document serves to help health care providers mitigate the risk of drug-induced ventricular arrhythmias while minimizing risk to personnel of COVID-19 exposure and conserving the limited supply of personal protective equipment.

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Clinical characteristics of coronavirus disease 2019 in China

Guan et al (N Engl J Med February 28, 2020;https://doi.org/10.1056/NEJMoa2002032, PMID 32109013) extracted data regarding 1099 patients with laboratory-confirmed COVID-19 from 552 hospitals in 30 provinces, autonomous regions, and municipalities in China through January 29, 2020. The primary composite end point was admission to an intensive care unit (ICU), the use of mechanical ventilation, or death. The median age of patients was 47 years; 41.9% of patients were female. The primary composite end point occurred in 67 patients (6.1%), including 5.0% who were admitted to the ICU, 2.3% who underwent invasive mechanical ventilation, and 1.4% who died. Only 1.9% of patients had a history of direct contact with wildlife. Among nonresidents of Wuhan, 72.3% had contact with residents of Wuhan, including 31.3% who had visited the city. The most common symptoms were fever (43.8% on admission and 88.7% during hospitalization) and cough (67.8%). Diarrhea was uncommon (3.8%). The median incubation period was 4 days. On admission, ground-glass opacity was the most common radiological finding on chest computed tomography (CT) (56.4%). No radiographic or CT abnormality was found in 157 of 877 patients (17.9%) with nonsevere disease and in 5 of 173 patients (2.9%) with severe disease. Lymphocytopenia was present in 83.2% of patients on admission. During the first 2 months of the current outbreak, COVID-19 spread rapidly throughout China and caused varying degrees of illness. Patients often presented without fever, and many did not have abnormal radiological findings.

Detection of hypertrophic cardiomyopathy using a convolutional neural network–enabled electrocardiogram

Ko et al (J Am Coll Cardiol 2020;75:722, PMID 32081280) developed an artificial intelligence approach for the detection of hypertrophic cardiomyopathy (HCM) from a 12-lead electrocardiogram (ECG). A convolutional neural network (CNN) was used with a digital 12-lead ECG from 2448 patients with verified HCM diagnosis and 51,153 non-HCM matched control subjects and tested on a different data set of 612 HCM and 12,788 control subjects. The area under the curve (AUC) of the CNN in the validation data set was 0.95 at the optimal probability threshold for having HCM of 11%. In the data set, the CNN's AUC was 0.96, with sensitivity 87% and specificity 90%. The model performed particularly well in younger patients (sensitivity 95%; specificity 92%). In HCM patients with and without sarcomeric mutations, the model-derived median probabilities for having HCM were 97% and 96%, respectively. *The authors conclude that ECG-based detection of HCM by an artificial intelligence algorithm can be achieved with high diagnostic performance, particularly in younger patients.*

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