

Initial COVID-19 affecting cardiac patients in China

European Heart Journal (2020) 00, 1
doi:10.1093/eurheartj/ehaa257

The coronavirus disease 2019 (COVID-19, the pathogen called SARS-CoV-2) has caused a worldwide outbreak since it occurred in Wuhan City, Hubei Province, China in late December, 2019.^{1–3} On 30 January 2020, the World Health Organization (WHO) declared that COVID-19 is a ‘public-health emergency of international concern’. On March 11, the WHO declared the virus a global pandemic. As of 25 March 2020, more than 375 000 cases of COVID-19 had been reported, and over 16 000 people had lost their lives, and this number is still increasing rapidly. Therefore, global research actions on COVID-19 are desperately needed to meet this unprecedented challenge. The largest cohort study to date of hospitalized patients with COVID-19 showed that in-hospital death was higher in patients with diabetes or coronary heart disease, and increased high-sensitivity cardiac troponin I during hospitalization was found in more than half of those who died.⁴ It is worth noting that the acute and chronic cardiovascular complications of COVID-19 need to be addressed.^{5,6} There are, however, only limited published data concerning cardiovascular presentations in the wake of viral epidemics. Currently, a total of 16 articles were found involving COVID-19 and cardiovascular diseases in the WHO database of publications on COVID-19, with the keywords of cardiovascular/myocardial/cardiac/heart. Among them, nine articles are published in the Chinese Journal of Cardiology (CJC). As Editor-in-Chief of the CJC, I will introduce two of the most remarkable papers.

Myocardial injury

This is recently reported in the CJC in a manuscript entitled ‘Impact of complicated myocardial injury on the clinical outcome of severe or critically ill COVID-19 patients’ by Professor Hesong Zeng and colleagues from Tongji Hospital Affiliated to Tongji Medical College, Huazhong University of Science and Technology.⁷ The retrospective study was conducted in 54 patients who were admitted to their hospital from 3 to 24 February 2020 and met the criteria of severe or critical conditions of COVID-19. The clinical characteristics and hospital mortality rate were analysed and compared between the patients with or without myocardial injury, which was defined as more than three times higher than the normal serum cardiac troponin level. During hospitalization, 24 of the patients were complicated with myocardial injury and 26 patients died in hospital. The in-hospital mortality was significantly higher in patients with myocardial injury than in patients without myocardial injury, 14 vs. 8. Moreover, the levels of C-reactive protein, average 153.6 ng/L vs. 49.8 ng/L, and N-terminal pro-B-type natriuretic peptide, 852.0 ng/L vs. 197.0 ng/L, were significantly higher than in patients without myocardial injury. Thus, the prevalence of myocardial injury is high among severe or critically ill COVID-19 patients, who face a significantly higher risk of in-hospital mortality. The study suggests that it is important to monitor and manage myocardial injury during hospitalization for severe or critically ill COVID-19 patients.

Heart failure

Heart failure (HF) is the serious, late-stage manifestation of cardiovascular diseases, which is often complicated with pulmonary infection.^{8,9} The chest computed tomography (CT) features of patients with HF are similar to those with COVID-19.¹⁰ Therefore, it is a great challenge to make a clear diagnosis early during the global pandemic, as pointed out by Professor Shenghua Zhou and colleagues from Second Xiangya Hospital of Central South University in their article entitled ‘Comparison of heart failure and COVID-2019 in chest CT features and clinical characteristics’.¹¹ A total of 7 patients with HF and 12 patients with COVID-19 in their hospital between 1 December 2019 and 15 February 2020 were enrolled. For imaging features, both groups had ground-glass opacity and thickening of interlobular septa, but the ratio of central and gradient distribution was higher in patients with HF than that in patients with COVID-19 (4/7 vs. 1/12). In the HF group, the ratio of the expansion of small pulmonary veins was also higher (3/7 vs. 0), and the lung lesions can be significantly improved after effective anti-HF treatment. Additionally, there are more findings with a rounded morphology in COVID-19 (9/12 vs. 2/7). Therefore, enlargement of pulmonary veins, lesion distribution, and morphology are highly important clinical findings to identify the chest CT features between HF and COVID-19. It is undeniable that this virus is presenting us with an unprecedented threat. However, it is also an unprecedented opportunity to come together as one to battle it. Research on the prognosis, evaluation, and management of cardiovascular diseases and cardiovascular complications in COVID-19 patients is therefore essential. These and other efforts give us hope that, together, we can and will prevail.