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Correlation between Takotsubo cardiomyopathy and SARS-CoV-2 infection

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ABSTRACT

Takotsubo cardiomyopathy (TTS), known as stress cardiomyopathy, is a rare disorder characterized by acute and transient (<21 days) left ventricular (LV) systolic (and diastolic) dysfunction, often associated with a stressful, emotional or physical event, most commonly found in the days leading up to (1 to 5 days). The syndrome defines the presence of regional abnormalities in the mobility of the LV wall, characteristically extending beyond a single division of the epicardial coronary artery and with symptoms mimicking acute coronary syndrome, in the initial stage of which it is treated as such by doctors during patient management. A typical pattern of regional abnormalities of the LV wall is hypokinesia, akinesia, or apical dyskinesia (apex ballooning) with basal hyperkinesia [1]. Recently, more and more reports have appeared about both the relationship of TTS with SARS-CoV-2 infection, and TTS may be closely related to SARS-CoV-2 infection and the ongoing pandemic. The enormous emotional stress caused by the pandemic and respiratory infections caused by SARS-CoV-2 could be potential triggers for TTS. The case series cited above implicates that TTS should be considered in the differential diagnosis across the entire spectrum of myocardial injury in SARS-CoV-2 infected patients. Myocardial damage associated with SARS-CoV-2 infection is usually attributed to sepsis, hypoxemia, coronary artery disease, and myocarditis. We hypothesize that TTS may also play a role among these lesions.

To the Editor,

Takotsubo cardiomyopathy (TTS), known as stress cardiomyopathy, is a rare disorder characterized by acute and transient (<21 days) left ventricular systolic and diastolic dysfunction, often associated with a stressful, emotional or physical event. TTS may be closely related to SARS-CoV-2 infection and the ongoing pandemic. The enormous emotional stress caused by the pandemic and respiratory infections caused by SARS-CoV-2 could be potential triggers for TTS. The case series cited above implicates that TTS should be considered in the differential diagnosis across the entire spectrum of myocardial injury in SARS-CoV-2 infected patients. Myocardial damage associated with SARS-CoV-2 infection is usually attributed to sepsis, hypoxemia, coronary artery disease, and myocarditis. We hypothesize that TTS may also play a role among these lesions.

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coronary angiogram showing significant changes in the proximal anterior descending artery and first oblique arteries. Ventriculography revealed a regional wall motion abnormality unrelated to coronary lesions, indicating typical Takotsubo cardiomyopathy [10].

In the case of a 50-year-old male confirmed by the PCR-SARS-CoV-2 test, coronary angiography showed normal coronary arteries. LV angiography showed basal segment akinesia and middle apex segment hyper-contraction at elevated diastolic pressure. Based on this finding, a diagnosis of reverse TTS was made [11]. A 59-year-old woman diagnosed with SARS-CoV-2 infection was admitted for dyspnea, ECG showed sinus tachycardia, delayed intraventricular conduction, and widespread negative T-wave repolarization changes in DIII and aVF. Given the lack of evident changes consistent with myocardial infarction on the ECG, the patient had an episode of acute chest pain after 12 h in which the ECG showed lateral ST-segment elevation with lateral giant symmetrical anterior negative T waves and prolonged QT. The patient, therefore, underwent emergency coronary angiography, which showed that the coronary artery was free from significant changes. The subsequent echocardiogram showed apical akinesia with an “apex balloon”, and a moderate reduction in systolic function (ejection fraction 40–45%), indicating symptoms of TTS [12].

In summary, the above cases allow to hypothesize that TTS may be closely related both to SARS-CoV-2 infection and the ongoing pandemic. The enormous emotional stress caused by the pandemic and respiratory infections caused by SARS-CoV-2 could be a potential trigger for TTS. The case series cited above suggest that TTS should be considered in the differential diagnosis across the entire spectrum of myocardial injury in SARS-CoV-2 infected patients. Myocardial damage associated with SARS-CoV-2 infection is usually attributed to sepsis, hypoxemia, coronary artery disease, and myocarditis. We hypothesize that TTS may also play a role among these lesions.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.mehy.2020.110454.

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