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COVID-19 and long-COVID-19 syndrome related myocarditis: The heart rhythm matters

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection leads to respiratory distress as the main manifestation in most patients, though there are also well-documented cardiovascular complications. It is with great interest that we read the paper by Szarpak et al. [1] regarding the cardiac complications of coronavirus disease 2019 (COVID-19) and long-COVID-19 syndrome. This manuscript is important and soundly covers a vast area of SARS-CoV-2 infection related cardiologic concerns. There is definite agreement that the post-COVID-19 myocarditis is a real threat, and its occurrence is most probably underestimated [2–4]. Moreover, SARS-CoV-2 infection may be followed by long-term extrapulmonary organ manifestations, with relatively frequent cardiac involvement [5]. All the more, the lack of reference to the reported post COVID-19 myocarditis-related heart rhythm disturbances are evident.

Indeed, most of the reported arrhythmias occur during the acute phase of the SARS-CoV-2 infection [6], however there are reports on clinically relevant heart rhythm disturbances in the course of post-COVID-19 myocarditis. As reported by Al-Assaf et al. [7], COVID-19 related myocarditis can manifest with permanent high-degree atrioventricular (AV) block, requiring cardiac pacemaker implantation. Conversely, in our recently published report [8] we described a case of symptomatic complete AV block in the course of post-COVID-19 myocarditis, requiring transvenous temporary cardiac pacing, that resolved spontaneously within 48 hours, and subsequent electrophysiological study as well as long-term electrocardiography (ECG) monitoring revealed normal AV conduction. The patient was discharged home without a permanent pacemaker, and 24-hour Holter monitoring performed at one-month follow-up revealed no AV conduction disturbances. Similarly, in another reported case-series of 3 patients with symptomatic COVID-19-related transient AV block, none of them required permanent cardiac pacing [9], however in 2 of the described patients the conduction disturbances occurred early in the acute phase of SARS-CoV-2 infection.

There are several possible mechanisms of cardiac damage in COVID-19, including hypoxemia, endothelial dysfunction, coronary artery thrombosis and cytokine-storm resulting in the myocardial damage [10]. This can also affect the cardiac conduction system, leading to potentially life-threating arrhythmias. In the settings of subclinical course of myocarditis, sudden cardiac death can be the only (and fatal) manifestation, which occurs weeks (or possibly months) after the acute phase of infection. In the described case, the development of the cardiac conduction system disease in a COVID-19 convalescent should raise awareness of possible long-term cardiac complications following SARS-CoV-2 infection. In a large-cohort observational study [6] the risk of such complication was increased in patients with associated comorbidities: hypertension, diabetes, heart failure and coronary artery disease. Interestingly, most of the patients with COVID-related heart rhythm disturbances had no previous history of arrhythmia [6]. Considering these findings, it is believed herein, closer follow-up with ECG monitoring should be recommended

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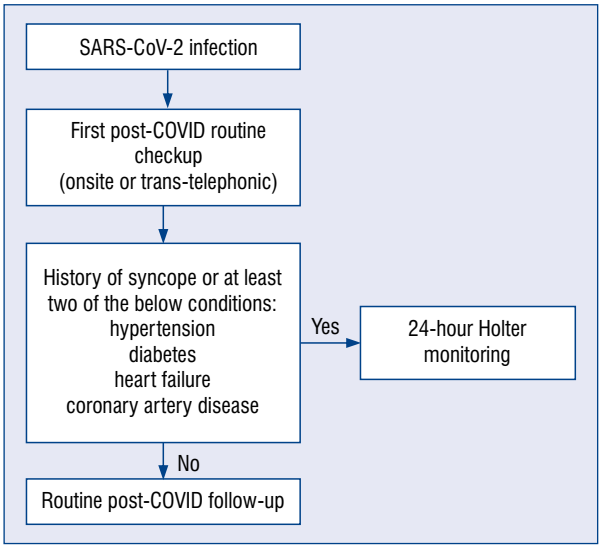

Figure 1. Proposed post coronavirus disease 2019 (COVID-19) follow-up scheme to identify late-onset cardiac arrhythmias; SARS-CoV-2 — severe acute respiratory syndrome coronavirus 2.

in selected post-COVID-19 patients with multiple cardiovascular comorbidities, as illustrated on the proposed scheme (Fig. 1).

Conflict of interest: None declared

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