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Contents lists available at ScienceDirect

Cardiovascular Revascularization Medicine

Role of Striated Muscles in the Pathogenesis of COVID-19☆,☆☆

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We read with interest the article by Sawalha et al. in Cardiovascular Revascularization Medicine on 'Systematic review of COVID-19 related myocarditis: insights on management and outcome' [1].

Coronavirus disease 2019 (COVID-19), which started at the end of 2019 and spread rapidly, is observed in primary and secondary cardiac involvement in addition to resistant pneumonia, respiratory failure. Although the exact mechanism of cardiac involvement in COVID-19 is not known, one of the possible mechanisms is that the cardiac involvement is mediated by angiotensin converting enzyme-2 (ACE-2). Another possible potential cause is cytokine storm caused by T helper cells [2,3].

Widespread muscle pain during the course of the disease and its more aggressive course in male sex may be considered to be the predominant involvement of striated muscle in the pathogenesis of the virus [4]. It may support this idea that it is more symptomatic in male sex with high striated muscle ratio, affects less the pediatric population with low striated muscle ratio [5], and affects heart muscle which is striated muscle structure. In addition, the recently produced high density of anti-serum against COVID-19 in horses with very high striated muscle ratio may be attributed to this [6]. In respiratory failure, the decrease in the support of the intercostal auxiliary respiratory muscles in the striated muscle structure may cause hypoxia to be resistant. It has been shown that computed tomography measurements of the pectoralis muscle can be useful in predicting the disease severity and mortality rate of COVID-19 pneumonia in adult patients [7].

In a recently published study investigating the pathogenesis of COVID myocarditis, myocardial damage was evidenced by echocardiographic reduction in left ventricular strain, myocarditis patterns on cardiac magnetic resonance and increased macrophage counts, but predominantly lymphocytic myocarditis was not detected in endomyocardial biopsies [8].

Recently, the increased use of steroid therapy in the treatment of COVID may offer dual protection in terms of myositis and heart muscle involvement and pulmonary benefits [9].

From this point of view, giving respiratory muscle training in the early stages of the disease and raising public awareness on this issue can be an important step in the management of the disease.

Consequently, it may be considered to consider striated muscle involvement and to make a follow-up and treatment plan accordingly.

Declaration of competing interest

There is no conflict of interest.

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☆ The authors have received no financial support.
☆☆ No individuals other than the authors have contributed to the manuscript.
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https://doi.org/10.1016/j.carrev.2021.05.003
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