

## **Cardiovascular Events After Coronavirus Disease 2019 Vaccinations Versus Long Coronavirus Disease**

To the Editor,

Cardiovascular and other adverse events after coronavirus disease 2019 (COVID-19) vaccination have been reviewed recently.<sup>1-5</sup> The consequences of vaccination described in the literature partly overlap with symptoms of post-COVID syndrome (PCS). Putative pathogenetic mechanisms also overlap: damage to the endothelium, microvascular inflammation and hypercoagulation, tissue hypoxia, autoimmune reactions, increased levels of inflammatory mediators, downregulation of angiotensin-converting enzyme 2 (ACE2) resulting in an increased activity of angiotensin II.<sup>6</sup> It can be reasonably assumed that effects of the spike protein (SP), observed in COVID-19, would to some extent appear also after administration of vaccines containing SP or inducing its synthesis. The SP from coronavirus or vaccines, binding with ACE2, could potentially cause an imbalance of ACEs, which plays a role in both COVID-19 and vaccine complications. Reportedly, the heart rhythm is affected by ACEs; and their deregulation can provoke arrhythmias.<sup>2</sup> According to another review, thrombotic events were the most common complication of COVID-19 vaccination.<sup>3</sup> Furthermore, adverse effects may be caused by adenoviral vectors contributing to blood clotting derangements and triggering immune responses. Further details of pathogenesis have been discussed.<sup>1-5</sup> Admittedly, postvaccination cardiovascular adverse events are usually benign and self-limited.<sup>5</sup> According to some research, uncomplicated COVID-19 infection had long term measurable effects neither on ventricular nor on atrial functions.<sup>7</sup> However, pressures for rapid approval of vaccines can result in the distribution of preparations with unstable quality, which depends on the manufacturing standards. There have been reports from Russia about blood clotting-related, cardiovascular, and other adverse events after vaccinations; references are in.<sup>4,8</sup> A case is known to us where a 65-year-old patient suffered an almost asymptomatic COVID-19 infection, was vaccinated a year later with Gam-COVID-Vac, and thereafter developed symptoms compatible with PCS: asthenia, shortness of breath, cardiac arrhythmia, numbness of limbs, and herpes zoster. Intense headache was noted immediately after the vaccination. In conclusion, PCS cannot always be clearly differentiated from postvaccination events. The above considerations can be regarded as an argument against vaccination after COVID-19 infection, especially at an early date. Children, young adults, and many other people can mount their own immune response to severe acute respiratory syndrome coronavirus 2, undergoing acceptably low risk. The rarity of reports on the side effects of COVID-19 vaccinations may be partly caused by local policies discouraging such reporting.<sup>9</sup> Healthcare providers should be vigilant for cardiovascular and other side effects of COVID-19 vaccinations. Further research, especially on the long-term risks of various vaccine types, is needed.

### **LETTER TO THE EDITOR**

**Sergei V. Jargin** 

*Department of Pathology, Peoples' Friendship University of Russia, Moscow, Russia*

**Corresponding author:**

Sergei V. Jargin  
✉ [sjargin@mail.ru](mailto:sjargin@mail.ru)

**Cite this article as:** Jargin SV. Cardiovascular events after coronavirus disease 2019 vaccinations versus long coronavirus disease. *Anatol J Cardiol.* 2023;27(12):735-736.

DOI:10.14744/AnatolJCardiol.2023.3887



**REFERENCES**

1. Bobescu E, Marceanu LG, Covaciu A, Vladau LA. Thrombosis, an important piece in the COVID-19 puzzle: from pathophysiology to therapy. *Anatol J Cardiol*. 2021;25(9):601-608. [\[CrossRef\]](#)
2. Cocco N, Leibundgut G, Pelliccia F, et al. Arrhythmias after COVID-19 vaccination: have we left all stones unturned? *Int J Mol Sci*. 2023;24(12):10405. [\[CrossRef\]](#)
3. Yasmin F, Najeeb H, Naeem U, et al. Adverse events following COVID-19 mRNA vaccines: a systematic review of cardiovascular complication, thrombosis, and thrombocytopenia. *Immun Inflamm Dis*. 2023;11(3):e807. [\[CrossRef\]](#)
4. Jargin SV. COVID-19 vaccination with special reference to cardiovascular side effects. *Medp Cardiol Vasc Med*. 2021;1(1):mpcvm-202112002.
5. Cereda A, Conca C, Barbieri L, et al. Acute myocarditis after the second dose of SARS-CoV-2 vaccine: serendipity or atypical causal relationship? *Anatol J Cardiol*. 2021;25(7):522-523. [\[CrossRef\]](#)
6. Karadağ B. Renin-angiotensin system inhibition in COVID-19 patients: friend or foe? *Anatol J Cardiol*. 2020;24(1):30-31. [\[CrossRef\]](#)
7. Akbulut M, Tan S, Gerege Uludağ DM, Kozluca V, Dinçer İ. Evaluation of cardiac function in uncomplicated COVID-19 survivors by 2-dimensional speckle tracking imaging. *Anatol J Cardiol*. 2022;26(11):841-848. [\[CrossRef\]](#)
8. Jargin SV. Cardiovascular events after COVID-19 vaccination: A comment. *Anatol J Cardiol*. 2022;26(4):340-341. [\[CrossRef\]](#)
9. Joob B, Wiwanitkit V. Acute myocarditis after coronavirus disease 2019 vaccination. *Anatol J Cardiol*. 2021;25(11):841-842. [\[CrossRef\]](#)