

# Influence of COVID-19 on cardiac arrest outcomes

Liudmyla Zakordonets<sup>1</sup>, Yuriy Stepanovskyy<sup>1</sup>, Alla Navolokina<sup>1</sup>

European School of Medicine, International European University, Kyiv, Ukraine

It is with great interest that we read the meta-analysis concerning the impact of the coronavirus disease 2019 (COVID-19) pandemic on the survival of patients with in-hospital cardiac arrest (IHCA) [1]. This study is important because of the responses to the additional deaths during the pandemic period. Since December 2019, there has been a struggle with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections and the COVID-19 disease caused by this virus, which became a global pandemic at the beginning of 2020 [2]. It is an extremely huge challenge for the health care systems as well as for the whole of society [3]. Bielski et al. [1] showed that the 30-day and overall mortality rates were not statistically different in pre- vs. intra-COVID-19 periods, however, pandemic 30-day mortality in COVID-19 positive vs. negative patients varied and amounted to 77.2% vs. 59.2%, respectively ( $p = 0.003$ ). These results are also confirmed in one of the most recent retrospective studies published in this field by Gupta et al. [4] which compared survival outcomes for 79,736 IHCAs between March–December during the 2015–2019 (pre-pandemic period) to 22,899 IHCAs among corresponding months in 2020 (pandemic period). During this trial survival to hospital discharge was 20.5% vs. 25.4%, respectively. It is worth noting that return of spontaneous circulation as well as survival to hospital discharge in the out-of-hospital cardiac arrests (OHCA) are even lower [5, 6]. In other meta-analyses performed also by Bielski et al. [7], survival to hospital discharge in pre- vs. COVID-19 period varied, and amounted to 11.5% vs. 8.2% ( $p < 0.001$ ). The same relationship was also observed for the 30-day survival rate (9.2% vs. 6.4%, respectively;  $p = 0.009$ ). According to Johns Hopkins University of Medicine as of November

5, 2022. 632,230,986 cases of COVID-19 infection were reported worldwide, with a mortality rate of 1.04% [8]. Although in-hospital COVID-19 mortality remains high, it decreased substantially after the first wave and is highly dependent on patient characteristics, the SARS-CoV-2 variant and the level of vaccination in society [9].

Regardless of the coronavirus mutations themselves, in patients with cardiac arrest, the key element influencing their survival is the fastest possible implementation of advanced resuscitation procedures and proper post-resuscitation care aimed at reducing pulmonary and cardiac complications resulting from SARS-CoV-2 infection [10]. Also noted was that the phenomena mentioned above is progressing, therefore, we must also pay special attention to the consequences caused by the pandemic and the increasing rates of cardiovascular complications that have arisen in patients after undergoing COVID-19.

**Conflict of interest:** None declared

## References

1. Bielski K, Makowska K, Makowski A, et al. Impact of COVID-19 on in-hospital cardiac arrest outcomes: An updated meta-analysis. *Cardiol J.* 2021; 28(6): 816–824, doi: [10.5603/CJ.a2021.0168](https://doi.org/10.5603/CJ.a2021.0168), indexed in Pubmed: [34985120](https://pubmed.ncbi.nlm.nih.gov/34985120/).
2. Dzieciatkowski T, Szarpak L, Filipiak KJ, et al. COVID-19 challenge for modern medicine. *Cardiol J.* 2020; 27(2): 175–183, doi: [10.5603/CJ.a2020.0055](https://doi.org/10.5603/CJ.a2020.0055), indexed in Pubmed: [32286679](https://pubmed.ncbi.nlm.nih.gov/32286679/).
3. Smereka J, Szarpak L. COVID 19 a challenge for emergency medicine and every health care professional. *Am J Emerg Med.* 2020; 38(10): 2232–2233, doi: [10.1016/j.ajem.2020.03.038](https://doi.org/10.1016/j.ajem.2020.03.038), indexed in Pubmed: [32241630](https://pubmed.ncbi.nlm.nih.gov/32241630/).
4. Gupta K, Girotra S, Nallamothu BK, et al. Impact of the three COVID-19 surges in 2020 on in-hospital cardiac arrest survival in the United States. *Resuscitation.* 2022; 170: 134–140, doi: [10.1016/j.resuscitation.2021.11.025](https://doi.org/10.1016/j.resuscitation.2021.11.025), indexed in Pubmed: [34838661](https://pubmed.ncbi.nlm.nih.gov/34838661/).

**Address for correspondence:** Dr. Alla Navolokina, European School of Medicine, International European University, Akademika Hlushkova Ave, 42B, Kyiv, Ukraine, tel: +380673772377, e-mail: [allanavolokina@ieu.edu.pl](mailto:allanavolokina@ieu.edu.pl)

Received: 6.11.2022

Accepted: 14.11.2022

Early publication date: 21.11.2022

This article is available in open access under Creative Commons Attribution-Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) license, allowing to download articles and share them with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially.

5. Borkowska MJ, Smereka J, Safiejko K, et al. Out-of-hospital cardiac arrest treated by emergency medical service teams during COVID-19 pandemic: A retrospective cohort study. *Cardiol J.* 2021; 28(1): 15–22, doi: [10.5603/CJ.a2020.0135](https://doi.org/10.5603/CJ.a2020.0135), indexed in Pubmed: [33140396](https://pubmed.ncbi.nlm.nih.gov/33140396/).
6. Meyer-Szary J, Jaguszewski M, Smereka J, et al. Impact of COVID-19 on pediatric out-of-hospital cardiac arrest in the Masovian region. *Disaster Emerg Med J.* 2021; 6(4): 183–185, doi: [10.5603/demj.a2021.0028](https://doi.org/10.5603/demj.a2021.0028).
7. Bielski K, Szarpak A, Jaguszewski MJ, et al. The influence of COVID-19 on out-hospital cardiac arrest survival outcomes: an updated systematic review and meta-analysis. *J Clin Med.* 2021; 10(23), doi: [10.3390/jcm10235573](https://doi.org/10.3390/jcm10235573), indexed in Pubmed: [34884289](https://pubmed.ncbi.nlm.nih.gov/34884289/).
8. <https://coronavirus.jhu.edu/map.html> (Access on 04.11.2022).
9. Roso-Llorach A, Serra-Picamal X, Cos FX, et al. Evolving mortality and clinical outcomes of hospitalized subjects during successive COVID-19 waves in Catalonia, Spain. *Glob Epidemiol.* 2022; 4: 100071, doi: [10.1016/j.gloepi.2022.100071](https://doi.org/10.1016/j.gloepi.2022.100071), indexed in Pubmed: [35018339](https://pubmed.ncbi.nlm.nih.gov/35018339/).
10. Al-Jeabory M, Borkowska G, Olecka A, et al. Mechanical chest compression devices as an option for out-of-hospital cardiac arrest in COVID-19 pandemic. *Disaster Emerg Med J.* 2021; 6(1): 50–51, doi: [10.5603/demj.a2021.0003](https://doi.org/10.5603/demj.a2021.0003).