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LETTER TO THE EDITOR

The use of cardiac markers in the prediction of COVID-19

Mohamad Gholamhosain Moghadam[1], Małgorzata Cielicka[1], Piotr Łojko[2]

[1]Research Unit, Polish Society of Disaster Medicine, Warsaw, Poland
[2]Institute of Outcomes Research, Maria Sklodowska-Curie Medical Academy, Warsaw, Poland

We read with great interest the article by Fialek et al. [1] relating to the diagnostic role of lactate dehydrogenase in coronavirus disease 2019 (COVID-19). Identifying biomarkers that can play a major role in the diagnosis and prediction of COVID-19 severity is of paramount importance and allows for the rapid implementation of adequate therapy [2]. The COVID-19 pandemic has posed significant challenges to healthcare systems worldwide, requiring the prompt and accurate prediction of disease severity and early identification of high-risk patients for effective management and resource allocation. In this regard, cardiac markers, traditionally employed in diagnosing and managing cardiovascular (CV) diseases, have emerged as potential predictors of disease severity and outcomes in COVID-19 patients [3]. This manuscript aims to review the current evidence on the use of cardiac markers in predicting COVID-19 and discuss their potential implications in clinical practice.

The COVID-19 virus primarily affects the respiratory system, but emerging evidence suggests its significant impact on the CV system. Patients with pre-existing CV conditions are at higher risk of severe illness and mortality. Therefore, cardiac markers, such as troponin, natriuretic peptides, and D-dimer, extensively studied in CV diseases, are now being investigated for their potential role in predicting COVID-19 outcomes [4].

Troponin, a well-established biomarker for myocardial injury, is elevated in COVID-19 patients, even in the absence of pre-existing cardiac conditions. Elevated troponin levels are associated with increased disease severity, mortality, and risk of CV complications. Serial troponin measurements can aid in risk stratification and guide treatment decisions in COVID-19 patients.

Natriuretic peptides, including B-type natriuretic peptide (BNP) and N-terminal pro-BNP, commonly used in the diagnosis and management of heart failure, have also demonstrated elevated levels in COVID-19 patients [5]. These elevated levels are associated with increased mortality and may serve as prognostic markers, reflecting the extent of cardiac involvement and identifying patients at higher risk of adverse outcomes. This is confirmed by a meta-analysis by Fialek et al. [1] in which the authors showed that the level of MR-proADM in COVID-19 survivors was 0.841 ± ± 0.295 nmol/L, compared to 1.692 ± 0.761 nmol/L for non-survivors ($p < 0.001$).

D-dimer, a marker of hypercoagulability and fibrinolysis, has been extensively studied in venous thromboembolism and other CV conditions. COVID-19 is associated with a prothrombotic state, and elevated D-dimer levels have been linked to increased disease severity and mortality [6]. Monitoring D-dimer levels in COVID-19 patients can help identify those at higher risk of thrombotic complications and guide anticoagulation strategies. While diagnostic and prognostic value of creatine kinase and myoglobin in COVID-19 is yet to be fully elucidated, they may provide additional insights into myocardial injury and inflammation associated with the disease.

The underlying mechanisms of cardiac injury in COVID-19 are not fully understood but may involve direct viral invasion, systemic inflammation, endothelial dysfunction, and microthrombi forma-

Address for correspondence: Piotr Łojko, PhD, MBA Executive, Institute of Outcomes Research, Maria Sklodowska-Curie Medical Academy, ul. Żelaznej Bramy 10, 00–136 Warszawa, Poland, e-mail: piotr.lojko@uczelniamedyczna.com.pl

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tion. Cardiac markers can help shed light on these mechanisms and provide valuable information for risk stratification and targeted therapies [7].

In terms of clinical implications, incorporating cardiac markers into risk prediction models and clinical decision-making algorithms can aid in the early identification of high-risk COVID-19 patients and facilitate appropriate interventions [8]. Serial monitoring of cardiac markers during hospitalization can help track disease progression and guide treatment adjustments. Furthermore, cardiac markers may play a role in the long-term follow-up of COVID-19 survivors, identifying individuals at increased risk of CV complications [9, 10].

While cardiac markers promise to predict COVID-19 outcomes, several limitations should be acknowledged. Variability in marker levels, lack of standardized cutoff values, and the potential influence of comorbidities on marker interpretation are factors that need to be considered. Future research should establish clear diagnostic and prognostic thresholds, explore the mechanistic links between cardiac injury and COVID-19, and evaluate the long-term implications of cardiac marker elevation in survivors [10].

Cardiac markers offer a promising avenue for predicting COVID-19 outcomes and guiding clinical management. By leveraging the existing knowledge of these markers from CV medicine and adapting it to the unique context of COVID-19, healthcare professionals can harness their potential to enhance patient care and mitigate the impact of the ongoing pandemic. Continued research and collaboration among multidisciplinary teams will be pivotal in realizing the full potential of cardiac markers in predicting and managing COVID-19.

Conflict of interest: None declared

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