Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Trends in Cardiovascular Medicine 31 (2021) 170–171

Contents lists available at ScienceDirect

Trends in Cardiovascular Medicine

journal homepage: www.elsevier.com/locate/tcm

Editorial commentary: Evidence-based medicine during a pandemic ☆,☆☆

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ARTICLE INFO

Keywords:
COVID-19
Myocardial injury
Clinical research

The COVID-19 pandemic has had devastating social, economic, and health consequences all around the world [1]. As this editorial is being written (on Christmas Eve, 2020), cases and deaths continue to rise globally. Almost a year after the start of the pandemic, many characteristics of the virus and its complications, including associated cardiovascular (CV) disease, have not been fully elucidated [2]. The medical community has been confronted by an unprecedented challenge and has had to use every available tool to develop and update knowledge (almost daily) to improve patient care.

When approaching a novel area of research, lessons from the past have a fundamental role in developing the knowledge of the future. There is perhaps no deeper learning achieved than that garnered through lived experiences. Accordingly, Rezkalla and Kloner [3] developed a timely article reminding readers that the link between communicable viral diseases and the CV system is not new. Rather, this relationship has had deleterious impacts on public health since at least the first influenza pandemic of the 20th century.

COVID-19 and influenza share some common features, including route of transmission, clinical presentation, and extensive effects on inflammatory and coagulation pathways, which are well established triggers of CV disease [4]. Conversely, the differences between both viruses are predominantly related to the comparative aggressiveness of COVID-19. The case fatality rate is almost 15 times higher and exhibits a greater proportion of cases with associated myocardial injury [4]. Myocardial injury is not only common in viral communicable disease but has predictive value for adverse outcomes in a variety of medical conditions [5]. The authors [3] make a highly valuable contribution to current literature by reviewing the evidence related to the CV implications of COVID-19. However, along with the crucial value of the manuscript [3] in the current context of the pandemic, it would be appropriate to perform a critical analysis of the presented evidence.

Technological advancement and innovation have enabled the medical community to synthesize, access, and exchange an immense amount of information with ease, which has distinguished this pandemic from historical public health crises. However, the privilege of technological advancement must be accompanied by a responsibility to conduct thorough and objective analysis. The accumulation of data about COVID-19 and its implications has raised questions and answers in similar proportions. During the first year of the pandemic, recommendations have been changing with an unprecedented velocity yet to be seen in the modern history of medicine. The pandemic created a chaotic scenario in which regimens with uncertain value were implemented while still being evaluated in clinical studies, and innovative statements were promptly criticized and disregarded [6]. The medical community had to turn to unknown paths: research laboratories changed their priorities to study aspects of SARS-CoV-2, journals made all COVID-19 research free to access, and the entire healthcare system was forced to combine their usual activities with the fight against this scourge [7].

Research conducted regarding the CV manifestations of COVID-19 was not immune to these problems. Initially considered a rare complication, and later seen as a main focus of attention, studies are continuously demonstrating the true magnitude of the CV impact and associated long-term effects of the virus [2]. Multiple pathophysiological mechanisms, biomarkers, diagnostic algorithms, and therapeutic targets have been proposed throughout these past months without the development of an absolute consensus on how to approach the consequences of COVID-19 on the CV system [8,9].

☆ Disclosures: None.
☆☆ Ethical statement: None.
DOI of original article: 10.1016/j.tcm.2020.12.007
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https://doi.org/10.1016/j.tcm.2020.12.009

It has been said that “it’s easy to be wise after the event”, and accordingly current analysis shows that early recommendations were largely made on the basis of isolated reports, small trials, or observational studies with little regard to the effect of unrecognized bias [10]. Even if an outbreak is not the ideal context for conducting rigorous clinical research, previous experiences have demonstrated systematic and accurate research processes should be (and can be) implemented [10]. Evidence-based medicine and critical thinking should not be lost, even in dire circumstances such as those experienced during the past year. As Rezkalla and Kloner have demonstrated in their most recent article [3] and previous publications [11,12], identifying the pathophysiological mechanisms of disease in a thorough, precise manner should be the primary step in conducting scientific trials before proposing diagnostic methods and potential treatments. Taking the opposite path may be attractive in the short term, but is unlikely to achieve the desired outcomes resulting in inconsistent information presented to the public and damage to their perception of the ‘scientific world’, accordingly.

The pressure, the fear, the urgent need for immediate responses, and the opportunism imposed by external agents should not negatively interfere with the quality of scientific research. This concept can be summarized with a clear example. During the first months of the pandemic (and continuously in many parts of the world), the previously established interventions such as social distancing, handwashing, use of masks, vaccination against other agents, and appropriate hemodynamic and respiratory support have been far more effective than breakthrough discoveries and bombastic announcements. But this is not a statement against innovation. On the contrary, it is the responsibility of the medical community to rapidly develop rigorous trials to evaluate the most promising regimens [10]. Although these achievements are not meant to be the result of isolated individual attempts, but rather the result of a global coordinated effort between public and private institutions in pursuit of a common good, that should be the answer not only for this pandemic, but for future public health crises.

Authors [3] should be commended not only for their research, but also for their willingness to remind us that COVID-19 pandemic (and medical science in general) has been, and still is, a continuous and rapid evolving learning process. In this process, critical thinking should not be abandoned, even in the worst imaginable scenarios [13]. Only in this way, the impact of the present pandemic in the learning process will have positive implications in the future.

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