



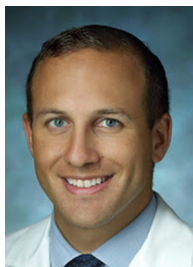
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Editorial

COVID-19 Pandemic and Acute Myocardial Infarction: Don't Ignore Chest Pain



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The coronavirus disease 2019 (COVID-19) pandemic has resulted in a substantial increase in mortality arising from acute respiratory distress syndrome and fatal complications, which has brought immediate, direct, and unprecedented global changes to our world and healthcare system [1]. In addition to the immediate threat posed by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, resulting in morbidity and mortality in millions of infected patients globally, changes in human behavior and resource allocations have led to a detrimental impact on public health [2]. Specifically, the regulations and measures taken to reduce viral transmission, such as public lockdowns, resulted in non-COVID-19-care becoming severely undermined. The COVID-19 pandemic has necessitated an unprecedented reorganization and rapid reshuffling of emergency care facilities worldwide to accommodate the increased clinical workload.

Further healthcare avoidance and treatment delays are apparent [3] and are of important concern for medically emergent conditions such as acute myocardial infarction (AMI). People with acute and chronic diseases have been reluctant to seek medical help, fearing that visits to emergency rooms and medical institutes could expose them to SARS-CoV-2. Worldwide, this observation has been reported, with reduction in AMI admissions and significant decreases in the number of cardiac procedures, including primary percutaneous coronary intervention, with worsened in-hospital outcomes [4]. In this issue of *Cardiovascular Revascularization Medicine*, Lavie and colleagues [5] focused on the indirect, collateral effects of the pandemic on patients with AMI who were free of SARS-CoV-2 infection with a unique opportunity to examine the possible psychological effects of the lockdown on hospitalization for AMI.

The authors tried to address this issue by examining hospitalizations for AMI (ST-elevation myocardial infarction [STEMI] or non-ST-elevation myocardial infarction [NSTEMI]) of non-COVID-19 patients of the Clalit Health Services in all Israeli hospitals, which provides medical services to 52% of Israel's population (nearly 4.5 million people) [5]. They focused on different phases of the first wave of the COVID-19

pandemic (February 9 to May 31, 2020), and these 15 weeks included 5 weeks before the first lockdown period, 5 weeks of the lockdown, and the 5 weeks after the lockdown was lifted. They compared the rates of hospitalization and 30-day all-cause mortality in the pre-lockdown, lockdown, and lockdown-lift periods in 2020 to the corresponding 5-week periods in 2018 and 2019.

The principal findings of their analysis demonstrated that significantly fewer patients were hospitalized with AMI during the lockdown phase (17% lower) than in the pre-lockdown period. Further, rates of AMI hospitalization were lower during the phases of the pandemic in 2020 than during the corresponding periods in 2018 and 2019. These reductions were mainly due to hospitalization of patients with NSTEMI; while hospitalizations of patients with STEMI were only significantly reduced during the post-lockdown period. Lastly, 30-day all-cause mortality rates of patients hospitalized with AMI did not differ significantly between the lockdown phases in 2020 and the corresponding 5-week periods in 2018 and 2019.

The finding of lower incidence of AMI hospitalization during the early COVID-19 lockdown is in line with other reports [6,7]. This finding is due, in part, to healthcare avoidance prompted by the fear of contracting SARS-CoV-2 infection in these centers and patients reluctant to seek care unless their symptoms were very severe. This led to patients arriving with a more severe presentation (i.e., mechanical complications due to AMI) or worse outcomes [8]. Increases in out-of-hospital cardiac arrest have been reported in some countries [9,10]. Unfortunately, the authors did not provide data on out-of-hospital death, and therefore, it is difficult to conclude whether there was any detrimental effect of “medical distancing” in the authors' study population.

Furthermore, it is important to highlight that early on in the pandemic (study time period), even after AMI patients presented to the emergency room, delays to receiving potential primary percutaneous coronary intervention were unavoidable. Stringent screening for COVID-19 was the primary focus of avoiding the nosocomial spread of COVID-19 rather than maintaining proper management of AMI. These

factors collectively led to longer time delays in the diagnosis and treatment of AMI patients. However, over time, hospital policies and protocols were implemented to ensure that all participating staff wear personal protective equipment to allow immediate primary percutaneous coronary intervention where appropriate.

Ongoing evidence has shown that the current pandemic is causing excessive deaths, both COVID-19 and non-COVID-19 [11]. The authors did not show any increase in 30-day mortality of AMI patients during the pandemic in Israel. Although 30 days is a relatively short period and the full effect of COVID-19 on AMI may yet to be fully unveiled, the data are reassuring. In addition, it is important to recognize that the combination of COVID-19 and AMI continues to carry higher morbidity and mortality [12]. However, over time, this rate has improved with the improvement of treatment options for COVID-19, early recognition of the disease process, and ongoing emphasis on early coronary angiography and percutaneous coronary intervention when appropriate [13].

The COVID-19 pandemic continues to present an unprecedented challenge and is changing the world and healthcare system. AMI admissions are reduced but care quality maintained, which has resulted in similar 30-day mortality outcomes compared with pre-COVID-19 era. This can only be accomplished by a stable healthcare system, with a collaborative effort from everyone. Further, it's our duty to get the message out to our patients that they should not ignore their chest pain (or other signs of a serious, potentially fatal condition). We are ready, and prepared, to treat cardiac patients even in the midst of a pandemic.

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Declaration of competing interest

Brian C. Case – None.

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