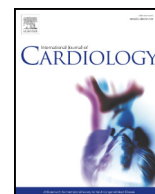




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Editorial

How much is good enough? Insights from myocardial infarction incidence during COVID-19 pandemic



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The ongoing COVID-19 pandemic has radically changed the way we live and had an enormous impact on the global healthcare system [1]. Among many restrictions imposed on the societies, the national lockdowns have particularly disrupted the natural social networks and forced citizens to involuntary isolation. As a result, many patients have felt discouraged to visit their doctors, while emergency departments have been perceived as potentially hazardous zones that one should avoid. Inevitably, this must have influenced the epidemiology of common diseases, in which the appropriate recognition of symptoms and timely intervention is the key aspect of effective treatment. One of these medical emergencies is acute myocardial infarction (AMI). In this issue, Rognoni and colleagues report on changes in admission rates due to AMI during the COVID-19 pandemic in Italy [2]. What they observed was a decline in AMI admissions during the national lockdown and partial return to the pre-lockdown admission rates during the first weeks after lockdown release. Interestingly, the post-lockdown return to normality was driven mainly by a distinct increase in hospitalizations related to non-ST-segment elevation MI (non-STEMI) but not due to STEMI. This study provides an important piece of information completing the landscape of cardiovascular disease development during COVID-19 pandemic and brings us some important insights.

First, the decline in AMI rates seems counterintuitive. COVID-19 pandemic caused multifactorial stress on many levels, societal, familial, and individual, such as fear of severe disease and death, which should logically lead to increase in AMI incidence. Previous retrospective studies have identified natural catastrophes such as earthquakes, emotionally charged events such as football matches and loss of a close relative as heralds of increased myocardial infarction incidence [3]. Analysis of AMI hospitalizations in the study area points out at a relatively flat curve over the whole year 2019, and much more interesting fluctuation during COVID-19 spreading in 2020. Indeed, the incidence of AMI rose just before

lockdown (effect of social anxiety in face of coming epidemic?) to decline and cross the previous year's incidence curve at the point of national lockdown introduction. Then, the admission rate for AMI distinctly decreased, a phenomenon which was independently observed in other countries following official lockdown declaration such as United Kingdom [4]. In Sweden, where social distancing but not the total containment was recommended, the reduction in AMI-related procedures during the first COVID-19 wave was more constant without typical lockdown nadir [5]. The mandatory social confinement seems to constrain both physically and psychologically the presentation of AMI patients to the healthcare system, but it may not be the whole truth. Other aspects such as relocation of healthcare resources to deal with the consequences of epidemic may have had impact on the availability of specialists at the right place and time. Consequently, both isolated and frightened patients, and dislocated and overburdened health professionals may have reduced the expected inflow of AMI patients and access to the coronary procedures during the pandemic. However, life style factors such as location activity and mobility may have reduced the true incidence of AMI: staying at home was shown to reduce AMI, while shopping, working or commuting increased AMI rates during the epidemic [6].

The lockdown release was logically associated with return to normal admission levels, also observed in UK [4]. In Sweden, both information campaign directed to the society and decline in COVID-19 rates led to increase in AMI-related procedures to pre-epidemic levels when the epidemic declined [5]. Second aspect of Patti's report is more intriguing: although admissions for AMI returned to the pre-pandemic level following the lockdown release, there was a distinct disparity between the two AMI forms. Admissions for non-STEMI exceeded pre-pandemic rates by 25%, whereas the opposite was observed for STEMI, a decline by 25%. Increase in non-STEMI may be due to presentation delay and accumulation effect – some of the affected individuals may have ignored the symptoms, endured milder forms of chest pain waiting for spontaneous resolution, or failed to be reported by relatives and caregivers when the restrictions were imposed. In contrast, as the public campaign about the need of attending hospital in case of medical emergencies reached society, and containments measures were lifted, the delayed non-STEMI cohort may have added to the expected normal

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AMI rates. However, lower than expected number of STEMI patients in the post-lockdown period is a warning sign. The good news might be that lower level of activity during lockdown could protect the most vulnerable patients, but the bad news is that some STEMI patients may have died at home. Finally, one might wonder which level of intervention against AMI is the accurate one. The post-procedural mortality following decline in AMI admissions has not clearly increased [5], and higher mortality in AMI is driven solely by concomitant COVID-19 infection [7]. More data and longer observation period are definitely needed to assess the overall effects of lockdown on mortality and long-term cardiovascular consequences [8].

Declaration of competing interest

The authors report no relationships that could be construed as a conflict of interest.

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