Trends in acute myocardial infarction admissions during the COVID-19 pandemic in Ankara, Turkey

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Introduction

The novel severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) was first detected in Wuhan, China in 2019 (1). The World Health Organization declared coronavirus disease 2019 (COVID-19) a pandemic on March 11, 2020, pointing to the over 118.000 cases of the disease in over 110 countries and territories around the world. Currently, more than nine million laboratory-confirmed cases are reported worldwide, and the number of patients is dramatically increasing (2). Thus, the Center for Disease Control and Prevention suggested the postponement of elective cardiac procedures including percutaneous coronary interventions in all stable patients, to provide enhanced health care in COVID-19 patients (3). Because hospitalization and timely reperfusion is crucial in patients with acute myocardial infarction (AMI), cardiology societies recommend invasive approaches and hospitalization in these patients during the COVID-19 era (4). However, prior reports show that there was a decline in the number of AMI admissions around the world (5-7). As it is unknown whether this decrease applies to Turkey, we sought to show the trends of AMI patient admission during the COVID-19 era.

The number of patients admitted to the Ankara City Hospital, the hospital with the largest bed capacity (3.704) in Europe, was determined using electronic health records between June 1st, 2019 (the start date of full-capacity work in the department of cardiology of the Ankara City Hospital) and May 6th, 2020. We used the international classification of diseases 10th revision to define AMI patients (I21.* means all I21 codes). The number of AMI patients was measured weekly. During the second week of March, 2020, the first laboratory-confirmed case of COVID-19 was identified in Turkey. This week was therefore used as the start date of COVID-19 in our study. A piecewise regression analysis was used to detect whether there was a volume change before and during the COVID-19 era. The study was approved by the institutional review board of the Ankara City Hospital.

A total of 3.147 hospitalizations were defined as AMI during the study period. The median number of patients per week before and during the COVID-19 era was 68.5 and 28.5, respectively, representing a 58.3% decrease. Additionally, the piecewise regression analysis showed that the number of AMI patient admissions decreased significantly during the COVID-19 era ($p<0.001$).

Our study shows that the number of AMI patient admissions decreased during the COVID-19 era, similar to prior studies in the United States, Spain, and Austria (5-7). This can be explained by the fact that patients with atypical chest pain symptoms such as localization with one finger, fleeting pains lasting a few seconds, pain reproduced by movement or palpation may not have been admitted to the hospital during the COVID-19 era, because of an increased risk of COVID-19 infection.

There are several limitations of the study. First, it is retrospective, with the possibility of inaccuracies in disease coding, since the latter was based on electronic health records. Secondly, we were not able to define baseline characteristics of patients and types of MI such as ST-elevation myocardial infarction (STEMI) or non-STEMI. Moreover, our findings may not be generalizable nationwide because our hospital was defined as a COVID-19 center.

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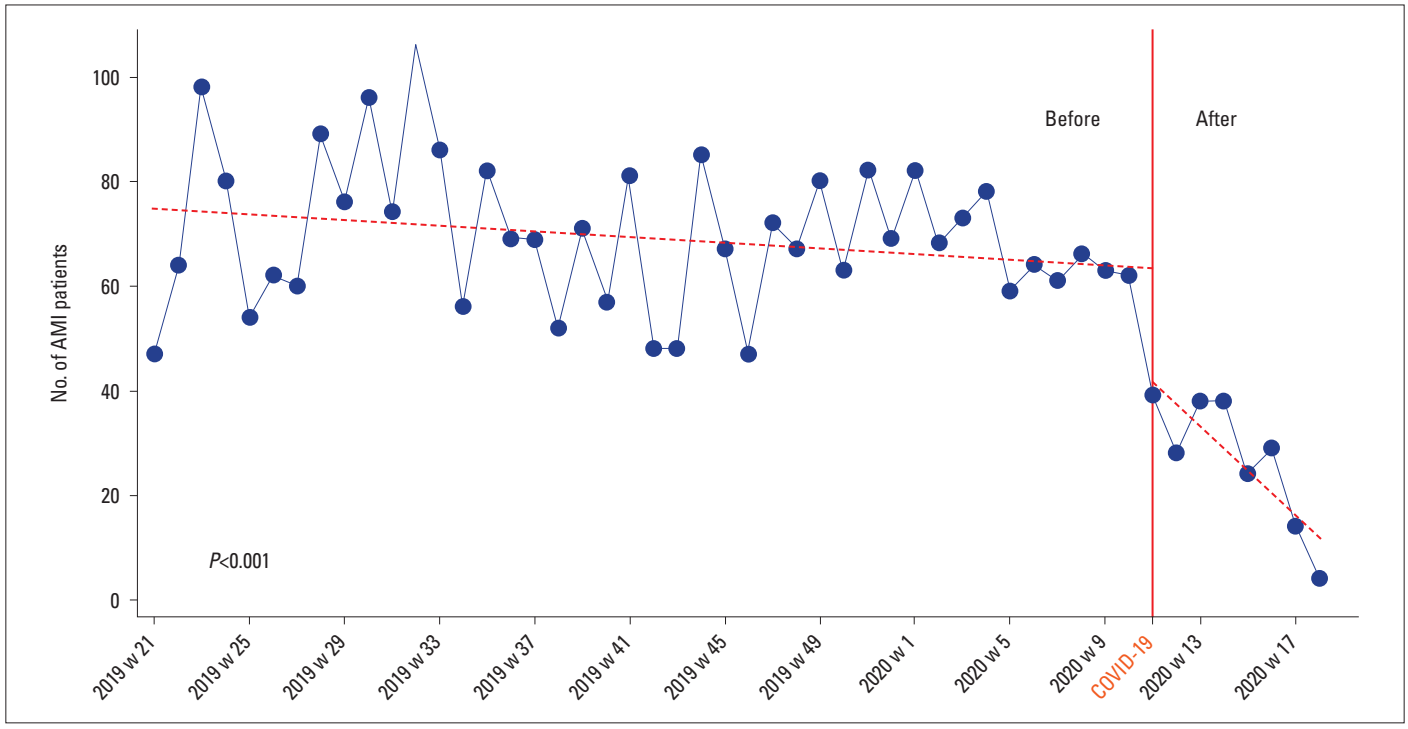

Figure 1. Weekly admission trends of acute myocardial infarction patients

Conclusion

In conclusion, the COVID-19 outbreak appears to significantly lower the hospitalization rates of AMI patients. Even if all healthcare professionals around the world including cardiologists are focusing on COVID-19 patients and have intense working conditions, every effort should be made by the cardiology communities to provide good quality health and medical care. Our findings are not applicable to other hospitals because our study was carried-out in a single center. Thus, multicenter studies are needed to show all AMI admission trends in Turkey.

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