ESC European Society of Cardiology
European Heart Journal (2020) **0**, 1–2
doi:10.1093/eurheartj/ehaa314

DISCUSSION FORUM

Decline of acute coronary syndrome admissions in Austria since the outbreak of COVID-19: the pandemic response causes cardiac collateral damage

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We conducted a nationwide retrospective survey on the impact of COVID-19 on the diagnosis and treatment of acute cornary syndrome (ACS) from 2 to 29 March in Austria.

Of the 19 public primary percutaneous coronary (PCI) centres contacted, 17 (90%) provided the number of admitted patients. During the study period, we observed a significant decline in the number of patients admitted to hospital due to ACS (*Figure 1*). Comparing the first and last calendar week, there was a relative reduction of 39.4% in admissions for ACS. In detail, from calendar week 10 to calendar week 13, the number of ST-segment elevation myocardial infarction (STEMI) patients admitted to all hospitals was 94, 101, 89, and 70, respectively. The number of

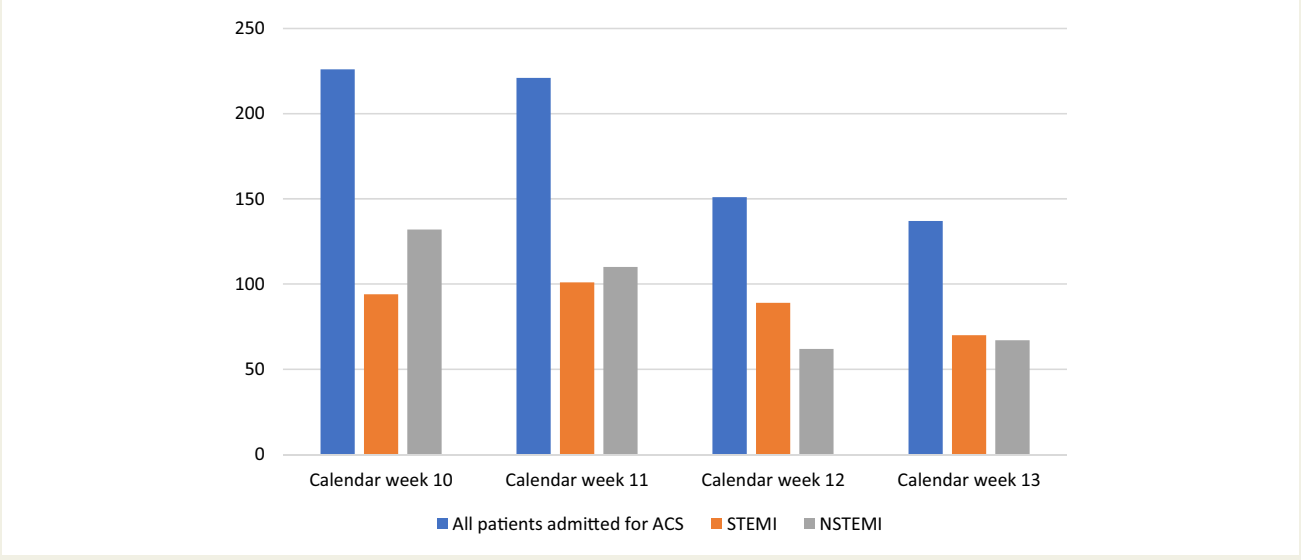

Figure 1 Decline of acute coronary syndrome admissions in Austria since the outbreak of COVID-19. The absolute numbers of all ACS (blue bars), STEMI (orange bars), and NSTEMI (grey bars) admissions in Austria from calendar week 10 to calendar week 13 are shown. Abbreviations: STEMI, ST-segment elevation myocardial infarction; NSTEMI, non-ST-segment elevation myocardial infarction.

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non-STEMI patients declined even more markedly from 132 to 110, to 62, and to 67.

The main finding of our retrospective observational study is an unexpected major decline in hospital admissions and thus treatment for all subtypes of ACS with the beginning of the COVID-19 outbreak in Austria and subsequent large-scale public health measures such as social distancing, self-isolation, and quarantining. Several factors might explain this important observation. The rigorous public health measures, which are undoubtedly critical for controlling the COVID-19 pandemic, may unintentionally affect established integrated care systems. Amongst others, patient-related factors could mean that infarct-related symptoms such as chest discomfort and dyspnoea could be misinterpreted as being related to an acute respiratory infection. Moreover, the strict instructions to stay at home as well as the fear of infection in a medical facility may have further prevented patients with an ACS from going to a hospital.

Irrespective of the causes, the lower rate of admitted and therefore treated patients with ACS is worrisome and we are concerned that this might be accompanied by a substantial increase in early and late infarct-related morbidity and mortality.

Our study does not provide data on mortality; however, considering the annual incidence of ACS in Austria (200/100 000/year = 17 600/year in 8.8 million habitants)[1] and taking into consideration sudden cardiac deaths and silent infarctions (one-third), there will remain ~1000 ACS cases a month. The difference between the assumed number of ACS patients and the observed number in our study, i.e. 725 ACS patients in calendar weeks 10–13 is 275. According to these assumptions, 275 patients were not treated in March 2020. Based on data showing that the cardiovascular mortality of untreated ACS patients might be as high as 40% (as it was in the 1950s),[2] we can theoretically estimate 110 ACS deaths during this time frame. The number of deaths associated with this unintentional undersupply of guideline-directed ACS management is very alarming, particularly when considering that the official number of COVID-related deaths in Austria was 86 on 29 March.

In conclusion, it seems likely that the COVID-19 outbreak is associated with a significantly lower rate of hospital admissions and thus, albeit unintended, treatment of ACS patients, which is most likely explained by several patient- and system-related factors. Every effort should be undertaken by the cardiology community to minimize the possible cardiac collateral damage caused by COVID-19.

References

1. Widimsky P, Wijns W, Fajadet J, de Belder M, Knot J, Aaberge L, Andrikopoulos G, Baz JA, Betriu A, Claeys M, Danchin N, Djambazov S, Erne P, Hartikainen J, Huber K, Kala P, Klinceva M, Kristensen SD, Ludman P, Ferre JM, Merkely B, Milicic D, Morais J, Noc M, Opolski G, Ostojic M, Radovanovic D, De Servi S, Stenestrand U, Studencan M, Tubaro M, Vasiljevic Z, Weidinger F, Witkowski A, Zeymer U; European Association for Percutaneous Cardiovascular Interventions. Reperfusion therapy for ST elevation acute myocardial infarction in Europe: description of the current situation in 30 coutries. *Eur Heart J* 2010;**31**:943–957.
2. Luscher T, Obeid S. From Eisenhower's heart attack to modern management: a true success story! *Eur Heart J* 2017;**38**:3066–3069.