

Myocardial infarction in the shadow of COVID-19

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Myocardial infarction (MI), the top cause of death globally, is associated with a high risk of heart failure development. The prognosis of MI depends on the ischemia size, which is correlated with the time from the onset of symptoms to reperfusion. Percutaneous coronary intervention (PCI) is a well-established treatment option for patients with MI [1]. In recent years, the most significant emphasis has been placed on the development of cardiology hubs of local networks that provide the shortest time to revascularization and improvement of MI treatment outcomes [2]. Moreover, managed care after MI has significantly improved results by increasing rates of cardiac recovery, complete revascularization, or implantation of an implantable cardioverter-defibrillator [3]. This situation has changed dramatically since the beginning of the pandemic of coronavirus disease (COVID-19), where over a very short period of time, an increased number of infected people were seeking medical assistance. COVID-19 confers the risk of severe acute respiratory syndrome caused by severe respiratory tract infection. Since the beginning of the pandemic, health systems have struggled to reorganize their health priorities due to the overwhelming number of patients requiring assistance and limited medical equipment. Emergency departments were transformed to be specifically dedicated to COVID-19 management. Many governmental authorities recommended the use of social distancing and 'stay at home and away from others,' as a means to control the spread of these infections and to be able to provide medical equipment and staff to treat those patients already hospitalized. While MI networks were and can presently still provide care for patients with MI, this care now involves another layer of caution. COVID-19 has changed the nature of medical consultations after MI, emphasizing virtual consulting with patients. The first patients of COVID-19 were reported in December of 2019 in Wuhan, China, and rapidly spread to the rest of the world [4, 5]. In Europe, northern Italy was the first affected region with the highest total case count and an exponential increase in the number of cases. What was observed in the MI care networks, was that many patients with the acute coronary syndrome (ACS) refrained from obtaining emergency medical services for fear of acquiring COVID-19 infection in the hospitals overwhelmed with COVID-19 patients. This dramatic situation was reported

all over the world as catheterization laboratories noted a dramatic reduction of ACS patients and an increase in mortality, which could not be solely explained by complications caused by COVID-19. Specifically, data from northern Italy showed a drastic reduction in the number of ACS patients reporting to cardiovascular centers at the time of the COVID-19 outbreak [6]. A comparable situation was observed in the United States of America, where during the early phase of the COVID-19 pandemic, the reduction of PCI in ST-segment elevation myocardial infarction (STEMI) patients was 38% [7]. The data from Spain was also alarming, which showed a 40% decrease in the number of PCI in STEMI patients [8], while in Switzerland, STEMI referrals decreased by 56% [9]. Data from Poland [10, 11] showed a greater decline in the number of procedures for non-STEMI (NSTEMI), unstable angina or chronic coronary syndrome than in those for STEMI. Legutko et al. [10] reported that after lockdown the number of PCI in STEMI decreased by 19.2%, while in a later period it declined by 16.2%. Conversely, the decrease of PCI procedures in NSTEMI after lockdown was more pronounced and reached 33.5%, while later on it even reached 36.1%. However, Siudak et al. [11] noted that in comparison to the corresponding period of the previous year there was a reduction in PCI of 36% for STEMI and 39% for NSTEMI. The statistics from other countries would presumably demonstrate similar trends; however, more data in this field has not yet been published. The data revealed that patients with ACS requiring PCI had been undertreated. A natural consequence of this situation is the growth in MI complications, translating into increased morbidity and mortality. Thus, this aspect of care for cardiac patients requires urgent attention. In addition to all the information relayed to the general public about the COVID-19 pandemic, the need for immediate contact with emergency medical services in case of chest pain should be emphasized. Hospitals should continue to use COVID-19 protocol, but healthcare professionals should continuously be aware of the fact that ACSs still represent the leading cause of death in a broad population despite current epidemiologic status. Although ACS may be accompanied by active COVID-19 infection, or even worse [12], COVID-19-associated myocarditis may mimic ACS [13], the need for urgent invasive coronary angiography in ST-segment elevation ACS is still of vital importance and should not be neglected [12]. This does not prevent the need for caution of infection, and presumably, each patient with ACS

should be regarded as COVID-19 positive until a negative test result is obtained. Nasopharyngeal swab for COVID-19 infection should be acquired in all patients upon admission, while all medical staff should be provided with adequate personal protection equipment against COVID-19. This was recently stressed in a consensus document by the European Association of Percutaneous Coronary Interventions (EAPCI) [14]. Only in this way can we improve the treatment outcomes of patients with ACS during a pandemic period. Let us not waste the decades of progress in the field of invasive MI treatment!

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