777   Prehospital ECG in patients with acute myocardial infarction during the COVID-19 pandemic

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Aims: Primary percutaneous coronary intervention (PCI) represents the preferred revascularization strategy among patients with acute ST-segment elevation myocardial infarction (STEMI). A decline in the rates of primary PCI has been observed globally during the outbreak of coronavirus disease-19 (COVID-19). Fear of exposure to in-hospital infection has been hypothesized as the main mechanism of this phenomenon, also contributing to a delayed presentation of patients with STEMI. However, a formal assessment of initial electrocardiograms (ECGs) among STEMI patients during the COVID-19 pandemic is still lacking. We therefore compared pre-hospital ECGs of STEMI patients hospitalized in Italy after the first reported case of COVID-19 on 21 February 2020 with data from the same period in 2019 to identifying potential changes between the two periods.

Methods and results: Prehospital ECGs were obtained from the STEMI care network in the Campania region. Deidentified ECGs were analysed by two expert reviewers who were blinded to date of recording. Pathological Q-waves were defined as a Q-wave with a duration ≥ 40 ms and/or depth $\geq 25\%$ of the R-wave in the same lead or the presence of a Q-wave equivalent. These criteria have been shown to be associated with final infarct size at cardiac magnetic resonance. For all conventional STEMI, the timing of STEMI onset was estimated with the Anderson-Wilkins (AW) acuteness score, ranging from 1 (least acute) to 4 (most acute). From 21 February 2020 to 16 April 2020, a total of 3239 pre-hospital ECGs were recorded by the emergency medical system and 167 (5.15%) were classified as STEMI. During the same period in 2019, 3505 pre-hospital ECGs were recorded, and 196 (5.59%) were classified as STEMI. There was no difference between the two study periods in terms of age, gender, type, and location of STEMI (Table 1). Pathological Q-waves were present in 54.5% of ECGs recorded during the COVID-19 period compared with 22.1% of ECGs recorded in the same period in 2019 (risk difference 32.3, 95% confidence intervals [CI]: 21.2-43.5 percentage points). There was also an increase in the mean number of Q-waves during the COVID-19 compared with the control period (1.4 vs. 0.9; $P < 0.001$). These findings remained similar when QS- and qR complexes were analysed separately. Consistently, the AW score was significantly lower during the COVID-19 period (2.4 vs. 2.8; $P < 0.001$).

Conclusions: Prehospital ECGs of STEMI patients during the COVID-19 pandemic presented more frequently with signs of late ischemia compared with the equivalent period in 2019. Approximately, one out of two patients had already pathological Q-waves in the initial ECG. The AW acuteness score is superior to patient history (historical timing) in predicting myocardial salvage and mortality after reperfusion in STEMI patients, thus explaining the higher mortality rate and the increased risk of infarct-related complications observed during the COVID-19 pandemic.