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are complex: patients may present with:

- Myocarditis simulating a STEMI presentation
- Stress cardiomyopathy
- Non-ischemic cardiomyopathy
- Coronary spasm, or
- Myocardial injury without a documented Type 1 or Type II AMI

**RESULTS** Surprisingly, and in contrast to these theoretical expectations, recent data suggest that the admission rate for ACS during the COVID-19 pandemic is much lower than expected rather than higher. In Austria, hospital admissions for ACS decreased by 39% in the last calendar week in March 2020 as compared with the first week, mainly affecting patients with non-ST-segment elevation myocardial infarction (NSTEMI). Similarly, in Italy, a survey of the Italian Society of Cardiology (SIC) comparing a 1-week period during the COVID-19 pandemic is much lower than expected rather than higher.

**CONCLUSION**

- **Timely reperfusion** of the affected myocardial tissue is fundamental in the management of patients with STEMI.
- **Rapid treatment** for STEMI with standard antithrombotic care (Heparin Cangrelor Ticagrelor).
- To avoid the possible cross-infection, a conservative strategy was principally preferred, but an invasive strategy sometimes became mandatory. Thus, the benefit/risk ratio of either approach should be weighed carefully. For a STEMI patient with low bleeding risk, shorter ischemic time, relative or less or less important myocardium (e.g., inferior wall) involved, the fibrinolytic therapy with third generation of fibrinolytic agent may be preferred. On the contrary, for elderly, patients with massive myocardium in jeopardy, longer ischemic time, or not satisfactorily reperfusion conservatively, resulting in recurrent ischemic events and/or electric/hemodynamic instability, the invasive strategy is strongly indicated.

**RESULTS**

- A recent publication by Zhang et al. [15] describe the presence of antiphospholipid antibodies in COVID-19 patients, which may lead to thrombotic events. In this regard, the necessity of antiplatlet therapy or intensifying an established therapy in COVID-19 patients with pre-existing coronary heart disease or a history of stenting, especially recent stenting, remains the goal of further research [15].
- Elevated biomarkers of thrombosis, such as D-dimer, IL-6, CRP, TnT are associated with disease progression and higher mortality [16].
- Consider a LMWH or UH preferentially as the initial agent in the hospital, and transition to DOACs after critical phase is over, and certainly at discharge.

**TCTAP A-007**

**Circulating Cell-Free DNA 5hmC Modifications as Candidate Biomarkers for ST-Segment Elevated Myocardial Infarction**

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**BACKGROUND** Acute myocardial infarction (AMI) remains a common cardiac emergency incidence worldwide. The inability to accurately and temporally predict the occurrence of AMI impairs our capability to further improve patient outcomes. Moreover, survivors of acute ST-segment elevated myocardial infarction (STEMI) are prone to develop progressive ventricular remodeling and dysfunction that leads to heart failure (HF). DNA 5-hydroxymethylcytosine (5hmC) modification is an epigenetic marker involved in a range of biological processes. Besides, accumulating evidence suggest that 5hmC and its TET2 enzyme, one member of the TET family, play an important role in atherosclerosis and are not only involved in the regulation of vascular smooth muscle cell phenotype, but also closely related to endothelial dysfunction and inflammatory immune response. However, little information is available about its role in coronary artery disease (CAD), particularly in the acute phase of STEMI.

**METHODS** We utilized 5hmC-Seal to generate genome-wide 5hmC profiles in plasma cell-free DNA (cfDNA) of normal coronary artery (NCA, n = 182) controls and STEMI patients (n = 193). Characteristics of 5hmC distribution and GO enrichment of differentially expressed genes were explored. To investigate the correlation between 5hmC modifications and STEMI, we separated samples into training, testing and validation cohorts and developed a 5hmC-based logistic regression model from the training cohort to predict the progression of STEMI.

**Machine learning**

- **Random split samples with 2:1 ratio**
- **Training cohort**
- **Training using Recursive Feature Selection**
- **Validation cohort**
- **Logistic regression**
- **Model-based feature selection**
- **Based on 5hmC markers trained in training cohort**

**StmC Capture with Streptavidin**

- **StmC Capture with Streptavidin**
- **StmC labeling with Biotin**
- **StmC Capture**
- **StmC labeling with Biotin**
- **Final Library of StmC containing cfDNA after PCR**

**RESULTS**

- **Number of Readmission And Death Within 3 Months Post Angiogram**

| Month Post Angiogram | Number of Readmission and Death |
|----------------------|---------------------------------|
| 3 months             | 15                              |
| 6 months             | 12                              |
| 1 year               | 9                               |
| 2 years              | 6                               |
| 3 years              | 3                               |

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