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Prognostic impact of atrial fibrillation in STEMI patients treated by primary percutaneous coronary intervention: a focus on cardiogenic shock

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Background: Atrial fibrillation (AF) is a common finding in patients with ST elevation myocardial infarction (STEMI). However, its prognostic influence in MI remains controversial. Almost all previous studies were performed before the era of primary percutaneous coronary intervention (pPCI), and there is a lack of data in patients with STEMI complicated by cardiogenic shock (CS). The aim of our study was to evaluate the prognostic impact of AF in a large real-world population of STEMI undergoing pPCI stratified by the presence of CS.

Methods: Our registry included 3017 consecutive patients with STEMI undergoing pPCI in our department in 2005-2017. The presence of a persistent (>30 min) systolic blood pressure < 90 mmHg associated with signs of pulmonary congestion/impaired end organ perfusion needing catecholamine infusion or mechanical support devices qualified for CS. Firstly we performed mortality analysis in all patients with AF during hospitalization; secondly, we compared patients with the first episode of AF and patients with AF during hospitalization but known AF in anamnesis. The analysis was stratified for the presence of CS. Univariate (cross-tables and Kaplan-Meier curves with log-rank test) and multivariate mortality analysis (Cox regressions) were performed. In STEMI patients without CS we also performed a propensity-matched analysis including all variables known before STEMI that could influence the occurrence of a first episode of AF.

Results: AF was present in 337 (11.3%) patients during hospitalization; in 193 (57.3%) of them was the first episode. CS occurred in 250 patients (8.4%), 27.2% of whom were affected by an AF episode (86.5% as the first episode). Among patients without CS, AF occurred in 269 patients (9.7%) and for the 77.5% was the first episode. In CS patients, AF was not associated with increased mortality, neither at 30 days (43.5% vs 43.7%, p = 0.867) nor at 1 year (47.5% vs 53.1%, p = 0.633). In the population without CS, AF was an independent predictor of mortality both at 30 days (HR 2.25 (1.05; 4.82), p = 0.037) and at 1 year (HR 1.87 (1.094; 3.18), p = 0.022); only new-onset AF was an independent predictor of mortality. We successfully matched 175 pairs of patients with similar propensity to experience the first episode of AF. Among them the first episode of AF was confirmed to be an independent predictor of mortality (figure).

Conclusion: In the present large real-world cohort of unselected patients with STEMI, the presence of an episode of AF during hospitalization was an independent predictor of mortality in patients not complicated by cardiogenic shock. Conversely, AF did not show a significant prognostic impact in patients with STEMI complicated by CS. Furthermore, the presence of a first episode of AF was confirmed to be an independent predictor of mortality, while an AF episode in patients with known AF was not found to have prognostic impact.

Abstract Figure

