Severe angina increases the probability of Takotsubo syndrome diagnosis among MINOCA patients

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Background/Introduction: Myocardial infarction with non-obstructive coronary arteries (MINOCA) still consists an "enigmatic" and heterogenous clinical entity. Takotsubo syndrome (TTS) represents a significant proportion of such cases. Despite its predominance on female sex and its imaging characteristics of the "signature" apical form, it remains hardly distinguishable from MINOCA without the contribution of cardiac magnetic resonance (CMR). On the other hand, INTERTAK score is the only risk model to estimate the probability of TTS, whereas angina characteristics were not used in this model. Considering the guarded prognosis of MINOCA and TTS, an early risk stratification and differential diagnosis could improve therapeutic decisions and prognosis.

Purpose: The aim of our study was to investigate potential prognostic markers of early diagnosis and risk stratification among patients admitted with a working diagnosis of MINOCA.

Methods: In a multicenter prospective study, we enrolled 111 patients aged 38-85 years old who fulfilled the diagnostic criteria of MINOCA. All patients received treatment according to the latest guidelines and consensus documents and CMR was performed within 30 days of the acute event. Patients with findings of myocarditis were excluded (n=21) and the remaining population was divided into TTS (n=38) and non-TTS (n=52) groups according to clinical assessment and multimodality imaging results. Non-TTS group included MINOCA patients with ischemic pattern of late-gadolinium enhancement (LGE) and patients with clear CMR representing the "MINOCA of unknown etiology" group. The investigated potential prognostic markers were parameters derived of blood pressure and heart rate variability assessed by 24hr ECG and blood pressure monitoring, as well as clinical parameters used in the most common risk stratification tools used in the setting of ACS, such as TIMI and GRACE scores.

Results: In our population, female sex (94.7% vs 55.8%, p<0.001), older age (67 ± 10 vs 60 ±12, p=0.003) were more frequent in TTS group. Focusing on angina characteristics, "severe angina" expressed as 2 or more episodes of angina within 24 hours as included in the established TIMI score was significantly more frequent among the TTS compared to the non-TTS patients (54.1% vs 24%, p=0.007). Multivariate analysis revealed that "severe angina" (OR, 0.153; CI 95%; 0.039 – 0.605, p=0.007) is predictive of TTS independently of age, ECG pattern, peak troponin and even after the inclusion of INTERTAK score in the model.

Conclusions: In our preliminary analysis, "severe angina" emerged as a potent and independent predictor of TTS diagnosis. Due to lack of availability of CMR, clinical tools as the INTERTAK score are useful in everyday practice. Based on our finding, inspired by the TIMI score, the presence of "severe angina" may strengthen the predictive value of the INTERTAK score when integrated with the latter.