Recovery of left ventricular ejection fraction in Takotsubo Syndrome

M. Bernardo¹, P. Rocha Carvalho¹, C. Carvalho¹, I. Moreira¹, P. Magalhaes¹, F. Goncalves¹, P. Mateus¹, S. Silva Carvalho¹, J.I. Moreira¹

¹Hospital Center of Tras-os-Montes and Alto Douro, Vila Real, Portugal

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Introduction: Takotsubo Syndrome (TTS) is a condition of transient left ventricular dysfunction that is typically triggered by emotional or physical stress. Left ventricular ejection fraction (LVEF) recovery in TTS occurs over a wide-range interval, varying from days to weeks.

Purpose: Our purpose was to access the prognostic impact of delayed recovery of LVEF in patients with TTS.

Methods: We performed a retrospective analysis of patients admitted in a single centre between 2008 and 2022 with the diagnosis of TTS, with a LVEF <50% at admission. Patients were divided into two groups: Group A- patients with the recovery of ejection fraction during hospitalization (LVEF ≥ 50% at the pre-discharge echocardiogram) and Group B- patients that had a delay in recovery, with LVEF <50% at the pre-discharge echocardiogram. Major adverse cardiovascular events (MACCE) included heart failure hospitalization, cardiovascular mortality, stroke and TTS recurrence.

Results: We included 63 pts, 88,9% females, mean age of 69,38 ±12,5 years. Group A included 27 pts, with a median LV EF of 37% (IQR 33-41) and group B included 36 pts with a median LV EF of 36% (IQR 33-38,8), with no statistically significant difference between the two groups (p= 0,347).

The median pre-discharge LV EF was 60,0% (IQR 56-65,6) in group A and 42,0% (IQR 37-47) in group B (p<0,005). The hospitalization length (HL) was similar between the two groups (mean HL of 7,9 ±7,8 in group A versus 8,1 ±8,4 days in group B, p= 0,93).

The two groups were similar in terms of basal characteristics, with more prevalence of psychiatric disease in group A (13,9% vs 33,3%, p= 0,066).

We found no statistically differences in clinical presentation and evolution during hospitalization (Killip class, cardiogenic shock, ventricular arrhythmias) and in the rates of concomitant coronary artery disease (14,8% group A versus 26,5% group B, p= 0,270). Also, the in-hospital medication and at discharge (Angiotensin-converting enzyme inhibitors, beta blockers, spironolactone and aspirin) were identical between the two groups. There was a tendency for more prescription of anticoagulants at discharge in group B (45,7% versus 22,2%, p= 0,055).

During a median follow-up of 41,0 months (IQR 14,0-54,5), group B had a higher rate of MACCE (34,4% versus 20,0%, log rank p= 0,033). In a multivariate analysis, after adjusting for possible confounders, delayed recovery of LV EF was an independent predictor of MACCE with a HR 6,1 (95% CI: 1,50-24,9, p= 0,012) (Fig.1).

Conclusions: In this population, delayed recovery of LV EF in TTS was an independent predictor of major adverse cardiovascular events. These findings suggest that this population should be targeted in clinical trials to investigate possible interventions and these patients should have a closer follow-up.