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Cardiogenic shock in STEMI patients: prevalence, management, in-hospital and one-year mortality over the last three decades

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Background: Cardiogenic shock (CS) is an ominous complication of ST elevation myocardial infarction (STEMI). However, the widespread use of reperfusion therapies and invasive management could have reduced the prevalence of CS and improved the prognosis of these patients in the last decades.

Purpose: The aim is to analyze the changes over last three decades in the prevalence, management and acute phase prognosis and 1-year mortality of STEMI patients complicated with CS.

Method: Between February 1989 and December 2017, 7,589 STEMI patients were consecutively admitted in the Coronary Care Unit of a University Hospital and were included in a prospective registry. Depending on the year of admission, patients were classified in five groups: 1989-1994: n=1,337, period 1; 1995-1999: n=960, period 2; 2000-2004: n=1,059, period 3; 2005-2009: n=1,535, period 4 and 2010-2015: n=2,698, period 5). We analyze the trend in prevalence of CS, management and in-hospital and 1-year mortality over these five periods.

Results: The global prevalence of CS was 6.1% (466 patients), mean age was 67.7 (SD 11.7) years and 68.7% were men. This prevalence remains without relevant changes from period 1 to 5 (7.3%, 6.4%, 5.5%, 5.8%, 6.0%, p<0.001), although it has been reduced more in women (10.1% in period 1 vs 8.3%, period 5, p<0.001) than in men (6.5% vs 5.4%, period 1 vs 5, respectively (p<0.001). Reperfusion therapy increased from 25.8% in period 1 (all with thrombolysis) vs 83.8% in period 5 (all with primary angioplasty). Intra-aortic balloon contrapulsation was only available from period 3 to 5, and it’s used were firstly increased (20.7%, 36% and 37.9%, respectively, p<0.001). Ventricular assistance device (Impella CP) it was only available in 2017 and it was implanted in 10.5% of CS due to STEMI. Although global in-hospital mortality is very high (59.4%, 277 patients), it has been reduced from period 1 to 5 (67%, 68.9%, 63.8%, 51.7% and 53.4%, respectively, p=0.015). This reduction in in-hospital mortality was higher in women (82.1% in period 1 vs 50% in period 5, p=0.05) than men (60.9% vs 50.4, period 1-5, p=0.06). One-year mortality has not been reduced between period 1-5 (67% vs 60.9%, p=0.55).

Conclusions: Cardiogenic shock prevalence in STEMI patients has reduced from 7.3% to 6.1% in the last three decades. The whole improvement in management of these patients achieves a 20% of reduction in in-hospital mortality. Despite this improvement, in-hospital mortality of STEMI complicated with CS remains over 53% in the primary angioplasty era. One-year mortality remains over 60% with no significant changes in the last 3 decades.