Sex differences in management and in-hospital outcomes in patients presenting with cardiogenic shock in a coronary care unit from a low to middle income country


National Institute of Cardiology, Mexico City, Mexico

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Background: Cardiogenic shock (CS) is the most severe expression of acute heart failure. Despite the advances in therapeutic and cardiovascular care, the mortality rate remains high. Recent trials showed that sex plays a significant role in the etiology, presentation, treatment and in-hospital outcomes in the setting of CS.

Purpose: To evaluate sex differences in demographics, baseline characteristics, management strategies employed and the outcomes following treatment between female and male patients with CS.

Methods: In this retrospective cohort study, we analyzed data from 872 patients admitted to the Coronary Care Unit from January 2006 to December 2021. CS was defined as systolic blood pressure <90mmHg or catecholamine use, cardiac index <2.2 L/min/m² of blood lactate ≥2 mmol/L. We evaluated baseline characteristics, prior comorbidities, laboratory parameters, treatment used and in-hospital outcomes.

Results: From the 872 patients studied, 617 (70.8%) were male and 255 (29.2%) were female. Among the baseline characteristics, the median age was 62 years for men and 66 for women, p=0.003. Current smoking was present in 29.7% of men vs 13.3% of women, p<0.001. Among prior chronic diseases, the significant differences were found in hypertension (47.7% men vs 56.9% women, p=0.013), dyslipidemia (28.9% men vs 22% women, p=0.037), AF (5.5% men vs 21.2% women, p<0.001), previous AMI >1 month (22% men vs 10.2% women, p<0.001), HF (24% men vs 33% women, p=0.006). Among clinical signs at presentation, differences were found in MAP: 71.7mmHg in men vs 62 in women, p<0.001. As for, LVEF measured by echocardiogram (30% in men vs 38% in women, p<0.001). Among laboratory parameters, the statistically different were Hb (14.6 in men vs 12.6 in women, p<0.001), Cr (1.6 in men vs 1.47 in women, p<0.001), Na (136 in men vs 135 in women, p<0.001), CPR (54 in men vs 40 in women, p=0.018) and lactate (3.9 in men vs 4.4 in women, p=0.024). Among the treatment strategies, the most common used catecholamine was norepinephrine (93.2% men vs 93.7% women, p=0.774), followed by dobutamine (71.3% men vs 63.1% women, p=0.018) and the most frequent number of catecholamines used simultaneously was 3 in both groups (39.9% men vs 40.8% women, p=0.131). Mechanical ventilation was used in 69.5% of men and 61.2% of women, p=0.017. IABP was placed in 45% of men and 19.6% of women, p<0.001. Considering the SCA1 stage, the overall comparison between men and women was statistically different, p<0.001. The general mortality rate was 64.7% in men vs 74.1% in women, p=0.007; and the days to fatal outcome were 9 for men vs 5 for women, p<0.001.

Conclusion: Women were more likely to be older, with higher comorbidity, received different treatment strategy and were most importantly less likely to be treated with percutaneous LVAD. Female sex was an independent predictor of higher SCAI stage leading to a higher in-hospital mortality, which has not been described before in current studies.