

1155

Prognostic impact of SYNTAX Score in patients with myocardial infarction with multivessel coronary artery disease and cardiogenic shock: insight from the CULPRIT-SHOCK Trial

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Background: The majority of patients presenting with myocardial infarction (MI) and cardiogenic shock (CS) have multivessel coronary artery disease. The prognosis impact of the SYNTAX score (SS) in this setting remains unknown.

Purpose: To evaluate the prognosis value of the SS in this high-risk population undergoing percutaneous coronary intervention (PCI)

Methods: The CULPRIT-SHOCK trial was an international, open-label trial, where patients presenting with MI and multivessel disease complicated by CS were randomized to a culprit-lesion-only or an immediate multivessel PCI strategy. Pre-PCI SS was assessed by a central core laboratory and patients were categorized as low SS (SS ≤22), intermediate SS (22 < SS ≤32) and high SS (SS >32). Adjudicated endpoints of interest were the risks of all-cause death or renal replacement therapy at 30 days and all-cause death at 1 year. Associations between SYNTAX score and outcomes were assessed using multivariate logistic regression.

Results: SS was available in 632 patients, of whom 265 (41.9%), 211

(33.4%) and 156 (24.7%) presented with low, intermediate and high SS, respectively. Patients with higher SS were older, with more frequent peripheral artery disease, less current smoking, lower creatinine clearance, and higher use of catecholamine. A stepwise increase in the incidence of adverse events transitioning from low to intermediate and high SS was observed with the 30-day risk of death or renal replacement therapy as well as the 1-year risk of all-cause death (*p* for trend <0.001, for all). After multiple adjustment, intermediate and high SS remained strongly associated with 30-day risk of death and renal replacement therapy and 1-year risk of all-cause death (Figure). There was no significant interaction between SYNTAX score and the coronary revascularization strategy for all endpoints.

Conclusion: In patients presenting with acute MI, multivessel disease and CS, the SYNTAX score was strongly associated to 30-day and 1-year mortality.

