STANLEy score: a new predictive model of 3-year major adverse cardiac events following "Full Metal Jacket" using new-generation drug-eluting stents

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Introduction: Percutaneous Coronary Intervention (PCI) using a "Full Metal Jacket" (FMJ) procedure (≥60 mm of continuous stent length) is often required to treat very long lesions, but its clinical efficacy and safety using contemporary drug-eluting stents (DES) remains to be determined.

Objectives: To identify predictors of major adverse cardiac events (MACE) associated with FMJ using new-generation DES. We sought to develop a simple model capable of accurately predict 3-year MACE following FMJ PCI.

Methods: A retrospective single-centre analysis of consecutive FMJ PCI performed between January 2015 and December 2018. Exclusion criteria were use of non-third generation DES, unsuccessful procedure and loss to follow-up. The primary endpoint was a composite of all-cause death, myocardial infarction, and target vessel revascularization. Demographic, clinical, angiographic, and procedural variables were evaluated. Logistic regression analysis was performed to determine independent predictors of outcome. Based on the results, a weighted scoring system was developed.

Results: The derivation cohort included 162 patients, mean age 65.9 ± 11.1 years, 83% male. The mean stent length was 73.8 ± 12.3 mm (range 60 to 116 mm), and the average number of stents was 2.74 ± 0.74 (range 2 to 5). 30-day, 1-year and 3-year MACE were 5.5%, 12.9% and 29.0%, respectively.

Multivariate analysis identified diabetes mellitus (hazard ratio (HR) 5.92; 95% confidence interval (CI) 1.57-11.54; p=0.011), Smoking habits (HR 8.37; 95%CI 3.05-15.55; p=0.001), Acute coronary syndrome (HR 3.51; 95%CI 1.03-8.98; p=0.045), Non-right coronary artery (HR 4.38; 95%CI 1.09-7.68; p=0.038), ostial lesion (HR 10.01; 95%CI 2.91-19.14; p=0.006) and severe calcification (HR 8.59; 95%CI 2.65-15.72; p=0.001) as independent predictors of 3-year MACE.

A composite score based on these 6 variables (STANLEy score) was created, ranging from 0 to 10 (Fig.1). High acuity was verified by ROC curve analysis (AUC 0.941, p<0.001). A score ≤ 3 was associated with a reduced probability (<15%) and a score ≥ 7 with high probability (>90%) of 3-year MACE.

Conclusion: The STANLEy score is a good predictive model which relies on 6 simple clinical and angiographic characteristics. This score may assist physicians in selecting high-risk patients for closer monitoring or aggressive antithrombotic strategy.