Predictors of no reflow phenomenon during primary primary percutaneous intervention

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Background:

No-reflow phenomenon is the most striking example of myocardial reperfusion clinical failure. It caused by a lack of adequate blood flow in tissues after successful recanalization of infarct-related artery and was of multifactorial nature. Patients with «no-reflow» have highly increased risk of complications such as reduced systolic function, heart muscle remodeling, dilatation, cardiac chambers hypertrophy/hyperplasia, left ventricular aneurysm etc. In addition, «no-reflow» increases the risk of death. Predisposition for «no-reflow» might be associated with a number of local and systemic factors.

Methods:

The study included 488 consecutive patients; with Acute STEMI underwent primary PCI. The patients were divided into a study group (400 patients), and a validation group (88 patients). The study group patients were subdivided into 2 subgroups, No reflow Group (N) 128 patients with (TIMI flow ≤2), and Reflow group (R) 272 patients with (TIMI flow 3), and different demographic , clinical , ECG , echo and angiographical data were collected and compared between the two subgroups. Relevant variables were entered in forward binary logistic regression analysis, a weighted score was constructed. The score was validated on the validation group.

Results:

An 8 variable scoring system was constructed as follows : age above 60years old 1 point , delayed reperfusion time more than 4hrs 2 points, large luminal diameter ≥ 2.8mm 2 points , long target lesion ≥ 20mm 4 points , high thrombus burden 1 point , initial TIMI flow ≤ 1 is 3 points , positive Ck-Mb on admission 2 points and elevated D-dimer ≥ 500ng/ml 1 point , with final total score = 16 points. A ROC analysis was per-formed for the scored patients showing that all patients scoring 10 points or more are most likely to have no reflow phenomenon, test sensitivity was 86% and specificity was 73 % , $P < 0.001$. Score validation revealed a sensitivity, specificity, accuracy, positive predictive value and negative predictive value of 80%, 92%, 86%, 89% and 85% respectively, in detecting no reflow during primary PCI in patients presented by acute STEMI.

Conclusion:

The current study suggested a weighted scoring system, to predict the development of no-reflow phenomenon during primary percutaneous coronary intervention in patients with acute myocardial infarction