Estimated Glomerular Filtration Rate Versus New CHA2DS2-VASc-HSF Score in Prediction of No-Reflow Phenomenon in STEMI Patients Treated by Primary PCI

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Background:

Despite the successful reopening of the culprit lesion, some ST-Segment Elevation Myocardial Infarction (STEMI) patients experience inadequate myocardial perfusion, known as the no-reflow phenomenon (NRP).

Aim and objectives:

This study aimed to compare the predictive value of the estimated glomerular filtration rate (eGFR) and the CHA_2DS_2-VASc-HSF score in identifying no-reflow in STEMI patients treated with primary percutaneous coronary intervention (PPCI).

Methods:

In this prospective, single-center cohort study, we enrolled 80 STEMI patients who underwent PPCI between February 2024 and February 2025. We compared the sensitivity, specificity, and predictive performance of eGFR and the CHA_2DS_2-VASc-HSF score in predicting NRP using receiver operating characteristic (ROC) curve analysis.

Result:

The ROC analysis showed that the area under the curve (AUC) for the CHA_2DS_2-VASc-HSF score was significantly higher than for eGFR (0.932 vs. 0.671; $P<0.001$). A CHA_2DS_2-VASc-HSF score cutoff >4 yielded a sensitivity of 75%, specificity of 100%, positive predictive value (PPV) of 100%, and negative predictive value (NPV) of 83%. In contrast, an eGFR cutoff ≤67 had a sensitivity of 47.22%, specificity of 86.36%, PPV of 73.9%, and NPV of 66.7%.

Conclusion:

The CHA_2DS_2-VASc-HSF score outperformed eGFR in predicting no-reflow in STEMI patients undergoing PPCI. Integrating this score into routine clinical practice may improve early risk stratification and guide management decisions for high-risk patients.

Keywords:

No-reflow phenomenon; STEMI; Primary PCI; CHA_2DS_2-VASc-HSF score; Estimated glomerular filtration rate (eGFR).

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