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Novel Clinical Prediction Model: Integrating A2DS2score with 24-hour ASPECTS and Red Cell Distribution Width for EnhancedPrediction of Stroke-Associated Pneumonia following Intravenous Thrombolysis

Niyada Sarawut Krongsut[1], Atiwat Soontornpun[2], Anusasnee[3]

[1]Division of Neurology, Department of Internal Medicine, Faculty of Medicine Saraburi Hospital, Saraburi, Thailand;
[2]Division of Neurology, Department of Internal Medicine, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand;
[3]Division of radiology, Saraburi Hospital, Saraburi, Thailand

[redacted]

DISCLAIMER

The authors declare no competing interests.

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We use this protocol and it's working

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ABSTRACT

Background:
Stroke-associated pneumonia (SAP) is a common leading cause of death during the acute phase. The A^2DS^2 score has been widely used to predict the risk of SAP. However, 24-hour non-contrast computed tomography-Alberta Stroke Program Early CT Score (NCCT-ASPECTS) and red cell distribution width (RDW) were not included in this scale. The purpose of the present study was to investigate the prognostic added value of combining 24-hour NCCT-ASPECTS and RDW with the A^2DS^2 score.
Methods:
A retrospective study of thrombolyzed acute ischemic stroke (AIS) patients from January 2015 to July 2022. Data on A^2DS^2 scores, 24-hour NCCT-ASPECTS, and RDW were collected. Three logistic regression models were created: Model A used only the traditional A^2DS^2 score; Model B (A^2DS^2-c) calculated probabilities using a logistic equation; and Model C (combined A^2DS^2-MFP) used multivariable fractional polynomial logistic regression and incorporated the A^2DS^2 score, 24-hour NCCT-ASPECTS, and RDW. Ischemic brain lesions in the middle cerebral artery area were assessed using 24-hour NCCT-ASPECTS after completing 24-hour intravenous thrombolysis.
Results:
Among a cohort of 345 thrombolyzed AIS patients, 70 individuals (20.3%) experienced SAP. The area under the receiver operating characteristic (AuROC) of 24-hour NCCT-ASPECTS and RDW were 0.841 and 0.621, respectively. The combined A^2DS^2-MFP calculation was significantly superior to the traditional A^2DS^2 score and A^2DS^2-c calculation (AuROC 0.917 vs. 0.880, P=0.026, and 0.917 vs. 0.888, P=0.024).
Conclusion: This study found that the 24-hour NCCT-ASPECTS and RDW enhanced the predictive value of the A^2DS^2 score for SAP after IV-tPA. The combined A^2DS^2-MFP model performed excellently in predictive performance, offering robust early SAP detection and potentially improving patient survival. Implementing this novel model in resource-constrained clinical settings could aid clinicians in effective monitoring, enabling risk stratification to guide clinical management.

ATTACHMENTS

Protocol.pdf

1 Novel Clinical Prediction Model: Integrating A^2DS^2 score with 24-hour ASPECTS and Red Cell Distribution Width for Enhanced Prediction of Stroke-Associated Pneumonia following Intravenous Thrombolysis