CLINICAL STROKE SCORES FOR DISTINGUISHING STROKE SUBTYPES: A SYSTEMATIC REVIEW OF DIAGNOSTIC TEST ACCURACY

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ABSTRACT

Background

Stroke is a major cause of morbidity and mortality especially in low and middle income countries. Computerized tomography is used to distinguish between ischemic and hemorrhagic subtypes, but it is expensive and unavailable in some low and middle income countries. Clinical stroke scores are proposed to differentiate between ischemic and hemorrhagic stroke but their reliability is unknown.

Objective

To synthesize the best available research evidence on the accuracy of clinical scores in distinguishing ischemic and hemorrhagic stroke in patients with acute stroke.

Inclusion Criteria

Participants

Patients admitted to hospital with acute stroke according to the World Health Organization criteria, regardless of age, sex or ethnicity.

Intervention

This review considered studies that evaluated the Siriraj, Guy's Hospital, Besson and Greek stroke scores compared to computerized tomography as the reference standard.

Outcomes

The sensitivity and specificity of the clinical stroke scores compared to computerized tomography results in distinguishing between stroke subtypes.

Types of Studies

This review considered studies of diagnostic test accuracy in which the index test(s) and reference standard were interpreted independently of one another on the same group of participants.

Search Strategy

We searched online databases for published and unpublished studies written in English and identified articles using predefined criteria.

Methodological Quality

Papers selected for retrieval were assessed by four independent reviewers for methodological validity prior to inclusion in the review using the **QU**ality **A**ssessment of **D**iagnostic **A**ccuracy **S**tudies tool.

Data Extraction

A modified Joanna Briggs Institute data extraction form was used to collect details from included studies.

Data Synthesis

A bivariate mixed effects binomial regression model was used to statistically pool data in meta-analysis. A narrative synthesis was undertaken where statistical pooling was not feasible.

Results

For studies from low and middle income countries, overall sensitivity and specificity for the Siriraj stroke score were 0.69 (95% CI 0.62-0.75) and 0.83 (95% CI 0.75-0.88) for ischemic stroke and 0.65 (95% CI 0.56-0.73) and 0.88 (95% CI 0.83-0.91) for hemorrhagic stroke. For the Guy's hospital stroke score, overall sensitivity and specificity were 0.70 (95% CI 0.53-0.83) and 0.79 (95% CI 0.68-0.87) for ischemic stroke and 0.54 (95% CI 0.42-0.66) and 0.89 (95% CI 0.83-0.94) for hemorrhagic stroke. For the Greek stroke score, sensitivity and specificity ranged from 0.39 to 0.64 and 0.63 to 0.88 for ischemic stroke and 0.11 to 0.44 and 0.63 to 0.96 for hemorrhagic stroke.

Discussion

Clinical stroke scores were developed for use in settings where computerized tomography scan is unavailable to differentiate between stroke subtypes but they minimally alter the post-test probability of disease and thus are not sufficiently accurate to replace neuro-imaging in differentiating stroke subtypes.

Conclusions

Clinical stroke scores are not accurate enough for use in clinical or epidemiological settings. Use of computerized tomography is recommended for differentiating stroke subtypes.

KEYWORDS

Stroke; clinical stroke score; Siriraj stroke score; Guys Hospital stroke score; Besson score; Greek stroke score; systematic review