Clinical Research– Junior Category
Best Oral Paper Presentation

00341

Validation of a Widely Applicable Clinical Risk Score for Cognitive Impairment after Mild Stroke

Russell Jude Chander, Lin Xuling, Angeline Choong May Kei, Shaun Hui Kuan Wei, Nagaendran Kandiah
National Neuroscience Institute

Aims: To develop and validate a clinical risk scale for predicting post-stroke cognitive impairment (PSCI), simultaneously addressing issues from previous scales that, while useful, had limited applicability.

Methodology: Three datasets with a combined N=1,088 were studied. A dataset of subjects from a neurology clinic in Singapore 3–6 months post-stroke, with no prestroke impairments, was used to identify variables significantly different between subjects with PSCI and without. Candidate variables underwent reverse stepwise logistic regression, with surviving variables assigned points based on β coefficients to develop a risk scale. The scale underwent receiver operating characteristic, calibration, and 10-fold cross validation analyses, and validation internally in an independent cohort of stroke subjects in Singapore, and externally in a cohort of stroke subjects from a neurology centre in Hong Kong.

Result: Data from 209 subjects [78 (37.32%) PSCI] was used to develop a 14-point scale based on age, education, cortical atrophy, nonlacunar infarcts, chronic lacunes, and white matter hyperintensities. The scale had area under the curve (AUC) of 0.820 (cross validation iterations 0.698-0.832). At 0–5, 6–10, and 11–-14 points, 14.29%, 53.26%, and 78.95% of subjects had PSCI. A cutoff of ≥6 had sensitivity 82.05% specificity 64.21%, positive predictive value (PPV) 57.66%, and negative predictive value (NPV) 85.71%.

The scale fared well in the internal validation with 185 subjects [35 (18.92%) PSCI, AUC 0.778, sensitivity 65.71%, specificity 71.33%, PPV 34.85%, NPV 89.92%] and the external validation with 694 subjects [360 (51.87%) PSCI, AUC 0.741, sensitivity 86.35%, specificity 51.80%, PPV 65.89%, NPV 77.93%].

Conclusion: The 14-point risk score developed was shown to be stable and useful in identifying subjects at risk for PSCI to a reasonable degree. This scale has a high applicability potential for stroke and emergency services globally, as well as in pharmaceutical trials targeting at-risk individuals.