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Reliability and Validity of the Canadian Neurological Scale, Thai Version

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Abstract

Background: The Canadian Neurological Scale (CNS) is one of the most reliable stroke severity assessment scales. There is a strong need for a simple and well validated stroke severity assessment scale among Thais.
Objective: To translate and perform a reliability and validity study of the Canadian Neurological Scale, Thai version (CNST).
Material and Method: Forward and backward translations of the original CNS version were independently performed. The final version of the CNS-T was prospectively tested for reliability and validity in acute ischemic stroke setting. Consecutive series of acute stroke patients were assessed by one of the six raters from three different types of healthcare providers: 2 stroke nurses, 2 internal medicine residents and 2 stroke fellows. Each patient was independently assessed twice at 3 weeks interval using video tape by all raters. Extent of infarction was measured by MRI lesion volume. Clinical outcome at 3 months was measured using modified Rankin Score (mRS). Correlation among the CNS-T and 3-mo mRS and MRI lesion volume were assessed. Inter and intra-observer reliabilities were evaluated.
Results: A total of 38 patients were enrolled. Median CNS-T was 8.5. Intra-observer reliability demonstrated a high agreement with an intraclass correlation (ICC) of 0.99, 0.97, 0.98, 0.96, 0.93 and 0.98 for 2 stroke fellows, 2 internal medicine residents and 2 stroke nurses respectively. Inter-observer reliability between the 6 raters was excellent: ICC 0.87 (95% CI; 0.81-0.92). The Spearman rank correlation coefficient was -0.55 ($p = 0.001$) between the initial CNS-T score versus initial MRI lesion volume and -0.61 ($p < 0.001$) between the initial CNS-T score versus 3-mo mRS.
Conclusion: The CNS-T can be performed by trained nurses, internists and neurologists with an excellent reliability. The CNS-T is a valid and simple clinical tool for stroke severity assessment among Thais.

Keywords: Acute stroke, Canadian Neurological Scale (CNS), Stroke

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