Computer Tomography for Prediction of Cognitive Outcomes after Ischemic Cerebrovascular Events

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Background: The aim of this study was to evaluate whether parameters noted on a single, acute computed tomographic (CT) scan, are associated with significant cognitive impairment (SCogI), and can help in the prediction of SCogI 3-6 months after stroke or transient ischemic attack (TIA). Methods: Patients with a recent (≤14 days) ischemic stroke or TIA, without preexisting dementia, underwent non-contrast CT scan within 24 hours of admission. A formal neuropsychologic battery was administered 3-6 months from index stroke. SCogI was defined as moderate cognitively impaired, not demented (CIND) (≥3 domains impaired), and dementia diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, criteria. Logistic regression models were used to examine associations between CT parameters and SCogI. Receiver operating characteristic analysis with an area under the curve (AUC) was performed to assess discriminatory ability of radiological parameters for SCogI. Results: In all, 318 patients were included: 250 (78.6 %) with ischemic stroke and 68 (21.4%) with TIA; the mean age was 59.8 (±11.4) years. At 3-6 months, 76 (23.9 %) had SCogI (67 CIND moderate and 9 dementia). The presence of significant atrophy (P = .02) and chronic infarcts (P = .03) were associated with SCogI at 3-6 months. A significant increase in AUC was noted after addition of summarized CT results to a clinical score derived from age and baseline Montreal Cognitive Assessment (cutoff 21 of 22) for detection of SCogI: .83 (.78-.89) to .86 (.82-.91); P = .03. Conclusions: CT parameters are independently associated with SCogI at 3-6 months after an ischemic cerebrovascular event and may be a clinically useful component in predicting for SCogI after stroke. Key Words: Stroke—transient ischemic attack—cognitive impairment—dementia. © 2014 by National Stroke Association

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Conflict of interest: None.
Sources of funding: National University Health System Start Up Grant (NPR008/NH01 M) and National Medical Research Council Centre Grant (NMRC/CG/NUHS/2010).
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1052-3057/$ - see front matter © 2014 by National Stroke Association http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2014.02.007

Journal of Stroke and Cerebrovascular Diseases, Vol. 23, No. 7 (August), 2014: pp 1921-1927

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