Letter to the Editor


To the Editor:

Sivakumar et al1 performed an important study of serial improvements by cognitive domain in 100 patients with transient ischemic attack (TIA) or minor ischemic stroke (National Institutes of Health Stroke Scale ≤3/42). We think that all forms of rapid cognitive decline should be in the same category, which contrasts with the slow cognitive decline of dementia and mild cognitive impairment. They grouped Montreal Cognitive Assessment (MoCA) test items by cognitive domain, a vastly superior approach than just considering global MoCA score. The domain of greatest interest for comparison with delirium is attention, represented by 4 MoCA tests: (1) 5-digit span forward (5-DSF)—attention ≤5 seconds; (2) 3-digit span backward (3-DSB)—attention ≤3 seconds; (3) vigilance test for A—15 seconds, impaired only in severe inattention; (4) serial subtraction from 100—measure of sustained attention and executive function. Serial 7 subtraction is poor in low education and is not specific for inattention. We defined 3 change parameters: (1) absolute change (AC) as final value—initial value; (2) relative change (RC) as AC/range of scale (5 points in 5-DSF, 3 in 3-DSB); and (3) relative change per day (RC/D) as RC/days between tests. Here are Sivakumar et al’s1 changes in MoCA attention battery (0=worst score, 6=best score): day 1 to day 7, AC=+0.1, RC=+1.67%, RC/D=+0.028% per day; day 7 to 30, AC=+0.1, RC=+1.67%, RC/D=+0.072% per day; day 30 to 90, AC=+0.2, RC=+3.33%, RC/D=+0.055% per day. Thus, the relative change in sum of 4 attention tests per day was from +0.055% to +0.72%. Now compare cognitive changes in 128 patients from Central Coast Australia Delirium Intervention Study (CADIS).2 This is a prospective randomized controlled trial registered with ClinicalTrials.gov (NCT01650896). CADIS enrolled persons aged >65 years with Confusion Assessment Method–positive delirium who also had 25% decline in attention or executive function ≥24 hours from onset. We label this rapid high-amplitude critical reversible cognitive decline. We measured 5-DSF, 6-DSF, and Delirium index4–5 (DI) daily until delirium resolved or day 14 of the hospital stay, whichever came first. Attention items in DI account for 9 of 21 (43%) of its points: spell 5-letter word backward, gross hypovigilance, and drowsiness and motor lethargy. From predmission to admission, 5-DSF fell 30.8%, 6-DSF fell 53.0%, and DI rose 43.8% (average 42.5%). Sivakumar et al’s1 article does not estimate prestroke test scores, so there is no way to compare the CADIS patients, but if we impute RC as 10% or 20% in the day before TIA or stroke, this is 23.5% or 47.0% as rapid as in CADIS. From day 0 to day 1 (start of recovery phase), CADIS RC/D scores improved by 3.6% for 5-DSF, 5.7% for 6-DSF, and 2.2% for DI, all 8- to 20-fold greater than daily recovery from day 1 to 7 after stroke/TIA. From day 1 to day 2, CADIS scores improved by 7.8% for 5-DSF, 12.3% for 6-DSF, and 7.4% for DI (26–44× greater than in stroke/TIA). From admission to day 7, CADIS scores improved by 12.2% for 5-DSF, 31.7% for 6-DSF, and 21.2% for DI (7–113× greater per day than stroke/TIA). Next we consider Sivakumar et al’s1 global MoCA changes. From day 1 to day 7, AC=+1.3, RC=+4.3%, and RC/D=+0.72% per day. From day 7 to 30, AC=+0.8, RC=+2.7%, and RC/D=+0.11% per day. From day 30 to day 90, AC=+0.2, RC=+0.67%, and RC/D=+0.01% per day. In conclusion, the imputed velocity of onset of cognitive decline for attention in rapid high-amplitude critical reversible cognitive decline is 2- to 5-fold greater than after minor stroke or TIA, and relative daily improvements to day 7 are 8 to 40× larger. It would be of interest to compare daily cognitive change after moderate stroke and to conventional Confusion Assessment Method–positive stroke, which will have much smaller rates of cognitive change compared with rapid high-amplitude critical reversible cognitive decline.

Disclosures

None.

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Letter by Regal Regarding Article, "Serial Montreal Cognitive Assessments Demonstrate Reversible Cognitive Impairment in Patients With Acute Transient Ischemic Attack and Minor Stroke"
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Stroke. 2014;45:e193; originally published online August 5, 2014;
doi: 10.1161/STROKEAHA.114.006326
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/45/9/e193

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