Cognitive Deficits in Hyperacute Stroke

To the Editor:

We read with great interest in the September issue of *Stroke* the article by Hillis and co-workers and the editorial comment by Merino and Heilman. In this very well-conducted study, Hillis et al showed that the National Institute of Health Stroke Scale (NIHSS) is not a reliable scale for assessing stroke severity and outcome because of the lack of items assessing the neuropsychological aspects of deficit, especially for the right hemisphere but also for the left one. Aphasia\(^1\) as neglect\(^2\) have been described to be factors of bad outcome after stroke, and we agree with the authors when they ask for a finest evaluation of cognitive deficits in the hyperacute phase of stroke, those factors being clearly underestimated by the NIHSS. This score may be wrongly reassuring in certain situations and patients with major neuropsychological deficit but without a severe sensory-motor deficit may not receive an acute phase treatment because of a too low score (NIHSS > 6 was required for rtPA treatment in the NINDS study\(^5\)).

We recently published results\(^6\) that could be considered as a first step in developing a short, easy-to-perform, neuropsychological evaluation for refining strategies of acute phase treatment for stroke. A 10-minute bedside score of aphasia, based on the Boston Diagnostic Aphasia Examination,\(^7\) was developed for the 4 main modalities of language (spontaneous verbal fluency, repetition, comprehension, and naming) and correlated with penumbra dynamics explored by perfusion computed tomography in the hyperacute period (<6 hours from symptoms onset) and diffusion-weighted MRI at 3 days. We showed that penumbra dynamics correlated with aphasia symptoms changes. If structures relevant for a modality\(^8\) were included in the penumbra and were rescued, the aphasia score improved significantly for this modality.

Another interesting result was that the improvement in aphasia correlated with improvement in the NIHSS score, even when this score was restricted to items not influenced by aphasia, confirming previous results\(^3\) describing aphasia as a bad factor for general outcome. In our study it was the case as quickly as the third day after stroke.

Therefore, not only the size of the penumbra has to be checked in the hyperacute phase of stroke, but also its localization. Again we agree with the authors that further studies on the penumbra dynamics in function-specific brain areas are required to help decision making in hyperacute stroke management, especially for the right hemisphere. A new stroke scale based on the NIHSS but including neuropsychological items has also to be built and evaluated in clinical trials. Our short bedside aphasia battery as well as the cancellation task used by Hillis et al\(^1\) and other right hemisphere specific tests should be part of this new score.

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1. Hillis AE, Wityk RJ, Barker PB, Ulatowski JA, Jacobs MA. Change in perfusion in acute nondominant hemisphere stroke may be better estimated by tests of hemispatial neglect than by the National Institutes of Health Stroke Scale. *Stroke*. 2003;34:2392–2396.
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