LETTER TO THE EDITOR

To The Editor

Disability Assessment in Acute Ischemic Stroke: Which Score/Instrument Is Better?

Keywords: AIS, Stroke, Disability, Survivors

We read with great interest the recently published article titled "Comparison of three instruments for activity disability in acute ischemic stroke survivors" by Wu et al.[1] The authors have concluded that there was a high correlation among the three included scales. We wish to add few points.

The authors have included three scales in their study, namely the Modified Barthel Index (MBI), Instrumental Activities of Daily Living (IADL), and modified Rankin scale (mRS), and compared their predictive performance. However, these three scales denote somewhat different aspects of disability, rather than describing the same variable and thus they are complementary to each other.

The MBI investigates the patient's capacity in following activities of daily living like feeding, bowel control, bladder control, personal hygiene, transfer, dressing, ambulation, bathing, and stair climbing. The IADL assesses the ability to use a telephone, shop, prepare food, housekeep, do laundry, use transportation modes, responsibly, take medications, and handle finances, which are altogether different activities than those included in MBI. Moreover, mRS does not mention in detail these activities and only depends on the degree to which the help is needed by the patient to perform usual activities. Thus, while the time taken to complete these tests will be different and they are best suited for different contexts like mRS will be more useful for severe stroke patients, IADL is likely to be more helpful for at least the stroke patients who have normal sensorium and able to interact with the environment meaningfully. It would have been better if the authors would have tried to determine these three scales will be most beneficial for which subgroup of stroke patients.

Second, the authors would have used for most of the predictive models, the NIHSS score as the dependent variable and MRS, MBI, and IADL as independent variables. But in reality, NIHSS is based on results of neurological examination of the patient and the rest of the three scores depict the functional outcome. Thus, the assumptions by the authors should have been the other way around, and the authors for some calculations as in figure 3 of the article used NIHSS as the independent variable. Moreover, the authors have assumed NIHSS on day 30 best describes the prognosis of the patient and compared the performance of the other three indices with NIHSS. But in the individual prediction model of NIHSS, the area under the curve of NIHSS is 0.659, far less than that of MBI (0.831). Thus from the results, it seems MBI has performed better than NIHSS, but the authors have not discussed about this contradictory finding and its interpretation.

Previously one large study by Young et al[2] simulated data from 6000 clinical trials, each with 1400 patients showed that the NIHSS neurologic scale appears more sensitive than the MBI or mRS, allowing smaller sample sizes or greater statistical power. Similarly, Ghandehari et al[3] have described that the modified NIHSS scale is better than the original NIHSS score used by authors. Patients with mild stroke often have higher NIHSS due to less reliability of few items and when some items remain unscored, even patients with severe deficits often score lower suggesting mild stroke. Poor arousal of severe stroke patients precludes testing items for ataxia or dysarthria and sometimes even when the patient improves, the score may artificially worsen, as they receive a score for the items previously unscored. These could be few reasons why NIHSS performed relatively poorly in the current study and it would have been better if the authors would have chosen modified NIHSS instead. Ghandehri et al[3], as well as the authors of the current study, have mentioned that inter-rater reliability is poor for MRS and it can be improved by the use of a formal structured interview, training, and certification programs using written and video case vignettes and central panel adjudication of local site-recorded video assessments. It would have been better if the authors would have video recorded a few of the assessments at least, which would have increased the reliability of the conclusion that mRS-measured disability level had the highest predictive value of short-term stroke severity.

Lastly, the authors have mentioned that three different nurses assessed MRS, MBI, and IADL simultaneously, which means they were not blinded to scores given by the other two nurses and this could have unintentionally introduced bias into the study.[4] The authors have also not mentioned who calculated the NIHSS score. It would have been more precise if the authors would have used physicians for calculating the score or at least the nurses would have been randomized in the context in which score will be determined by which nurse for any patient and they were unaware of scores given by other nurses. Also, the authors should have utilized the generalized estimating equation method for calculating the sample size for studies exploring the correlation between variables, rather than arbitrarily choosing a sample size of 136, which is relatively small.[5,6]

Disclosures

The authors have no conflicts of interest to declare.

Statement of authorship

PKP and IKS: involved in manuscript writing and literature research.

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