Cognitive assessment in glioma patients

TO THE EDITOR: I read with great interest the article by Wu et al.19 (Wu AS, Witgert ME, Lang FF, et al: Neuropsychological assessment before and after surgery for insular gliomas. Clinical article. J Neurosurg 115:1115–1125, December 2011), in which the authors demonstrated the existence of common neurocognitive impairment in insular as well as noninsular gliomas, nonetheless with few statistically significant differences in both groups at either the pre- or postoperative evaluation.

Interestingly, recent advances in neuroimaging have allowed earlier diagnosis of gliomas, in patients with few symptoms (seizures) or even in asymptomatic patients (incidental discovery), especially diffuse low-grade gliomas (LGGs).12 As a consequence, as stated by Wu et al., a standard neurological examination is not accurate enough to objectively assess these patients. Thus, an extensive neuropsychological examination should be performed in a more systematic way. Indeed, in patients with LGGs, it was shown that more than 90% experienced at least some neurocognitive deficits (for example, working memory disorders) prior to any treatment, whatever the location of the glioma (insular or noninsular).15 In addition, a postoperative neuropsychological assessment is also crucial to better evaluate the possible impact of glioma resection on high-order functions. Therefore, the authors have to be congratulated for their original data, in particular regarding insular gliomas.

However, such extensive cognitive examination should be more actively used to modulate therapeutic management. First of all, on the basis of the presurgical assessment, intraoperative tasks must be adapted to optimize the reliability of functional mapping in awake patients throughout the resection.2 For example, Wu et al. observed greater postoperative decline in the domains of visuoconstruction in patients with right-sided insular tumors. It is worth noting that awake surgery with mapping of spatial awareness (for example, line bisection task) can be achieved in right gliomas to avoid visuospatial impairments, such as hemineglect.16 Awake surgery with language mapping may also be chosen for right-handed patients with right-hemisphere tumors when the presurgical assessment evidences even slight language disorders, showing the participation of the “right nondominant” hemisphere in this function.17 In addition, preoperative neuropsychological scores should be considered as reflecting only a part of the real quality of life, which must be redefined for each patient according to his or her job, habits, hobbies, and projects.2 Therefore, it can be important to map different languages as well as language switching in multilingual patients10 or to map calculation in a school teacher,5 cross-modal judgment in a manager,11 syntax in a writer,18 and so forth.

In the postoperative period, the immediate postsurgical cognitive assessment can also be useful to build a specific rehabilitation program. In their report, Wu et al. did not discuss cognitive rehabilitation; a recent prospective randomized trial demonstrated the significant role of such rehabilitation in brain tumor patients.8 In a surgical series of left insular LGG cases, patients benefited from specific rehabilitation at home following resection, on the basis of postoperative cognitive examination that showed working memory deficit despite the lack of language impairment.7 Interestingly, such neuropsychological scores after surgery, especially assessments of lexical access speed, may represent a good predictive factor of the long-term quality of life, in particular concerning return to work.11 Mechanisms of brain plasticity underlying functional compensation are likely elicited by LGG growth itself as well as by adapted rehabilitation.4

Finally, long-term follow-up is essential (although not detailed by Wu et al.), particularly for LGG patients, with a long median survival. To this end, with the aim of better evaluating the benefit-risk ratio of a therapeutic strategy, it was recently proposed to calculate simultaneously (and not separately) both the functional and oncological gain of a treatment, by plotting time with quality of life (including objective neurocognitive assessment) versus time to malignant transformation in LGG.9 This can be helpful in comparing subgroups of patients, such as those with insular gliomas versus those with noninsular gliomas. Indeed, as supported by the results reported by Wu et al., the same surgical treatment must be considered regardless of whether the tumor is located within the insula or elsewhere in the brain—in agreement with the recent surgical series for insular gliomas that showed a low risk associated with surgery and a significant impact on epilepsy control as well as an increase of median survival.5,14 On the other hand, because the resection cannot be complete in all insular cases, combined therapeutic strategies might be considered, for instance by performing (neo)adjuvant chemotherapy. Of note, a recent study has evaluated both quality of life and neurocognition in patients who were treated with a combination of chemotherapy and surgical resection(s) for an LGG, showing an excellent tolerance of combined therapies.1

In summary, longitudinal neurocognitive assessments—before and after each treatment—should be more widely performed in patients with gliomas, especially LGG, in a more active way, in order to 1) select the best surgical tasks during intraoperative mapping at the individual scale, 2) develop a specific postoperative rehabilitation, and 3) help in the determination of the best personalized therapeutic strategy over years.

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Closed head injury


Head injury often leads to morbidity and mortality. Therefore, the investigation of a novel therapeutic approach is very important. Zhang et al. initiated an experimental investigation to evaluate the therapeutic effect of Cerebrolysin on an experimental closed head injury (CHI) model. They concluded that early Cerebrolysin administration demonstrated a neuroprotective effect, with improvement of functional recovery in rats after CHI.

However, the time point for delayed administration of Cerebrolysin (after CHI for 1 hour) has not yet been investigated. It is very important that delivery of Cerebrolysin should be considered in patients not enrolled in the 1st hour after CHI, because it often happens that some of the patients with CHI present to the emergency room after 1 hour. Therefore, further investigation of the time course of the administration of Cerebrolysin is warranted before clinical trials.

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