

# **THE NEUROPSYCHOLOGICAL ASSESSMENT SCORE: A NEW INDICATOR FOR COGNITIVE REHABILITATION AND OUTCOME OF ELDERLY PATIENTS WITH INTRACRANIAL MENINGIOMA.**

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## **ABSTRACT**

*Object:* Surgical indication in elderly patients with intracranial meningiomas remain a matter of discussion. Clinical Radiological Grading System (CRGS) is a good validated score in patients older than 70 years old but is not able to furnish indications about severity of neurological functioning impairment and patient's need of rehabilitation after surgery. Therefore, for the first time in the literature, a neuropsychological assessment is used to evaluate patients pre-operatively and over time. Neuropsychological evaluation of patients could be a useful instrument to support surgeons in estimating the need of neurological functioning impairment rehabilitation and to evaluate the symptomatic and functional outcome of patients after surgery.

*Methods:* Between 2011 and 2013 16 patients (8 female and 8 male), median age 71,5 (range 70-85) and median education 8 (range 0-13) underwent a neuropsychological tests battery assessing language, memory, attention, executive verbal and non-verbal functions and visuo-constructive abilities, at different time-points (pre-operatively, post-operatively, at 3 and 12 months after surgery). For the pre-operatively assessment, a new score called Neuropsychological Assessment Grading (NAG), was created.

*Results:* NAG was correlated with the need of rehabilitation ( $p=0,002$ ). Neuropsychological tests showed significant improvements ( $p<0,05$ ) at different time-points. Only post-operatively assessment showed a general low performance for all patients ("surgery effect").

*Conclusions:* Neurosurgeon can predict the necessity of post-operatively motor rehabilitation due to meningiomas location and can select patient on mortality risk using CRGS. Based on the results of NAG score, neuropsychologist may indicate which cognitive functions are impaired and riskfull. Tests composing NAG, and in general neuropsychological follow-up, can be a useful tool to indicate the necessity and planning of cognitive rehabilitation. Neuropsychological tests have proven their value in assessing the effect of surgery in elderly patients with meningioma, and patients can be followed over time with them.

Surgical treatment in elderly patient, already selected by CRGS, brings to an improvement of cognitive functions which is associated with a better quality of life.