Early measures of cognitive function predict survival in patients with newly diagnosed glioblastoma.

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Abstract

Cognitive dysfunction is a common manifestation of primary brain tumors. We evaluated the association between early cognitive dysfunction and prognosis in a cohort of patients with newly diagnosed glioblastoma. Ninety-one patients who completed neuropsychological assessment after tumor resection but before further treatment were identified in the MD Anderson Neuropsychology database. The relationship between performance on cognitive testing and survival was evaluated using not only Cox proportional hazards models that included clinical factors such as age and KPS but also the Kaplan-Meier method. Median survival time from surgery was 20.7 months. Rates of impairment on cognitive testing ranged from 7.1% for Similarities, to 60.0% for Hopkins Verbal Learning Test-Revised Total Recall. As continuous variables, the Clinical Trial Battery Composite, Trail Making Test Part B, and Controlled Oral Word Association test were associated with survival. Impairment on the Trail Making Test Part B, Controlled Oral Word Association, Similarities, and Digit Span were associated with mortality. Kaplan-Meier analysis demonstrated the survival impact of these tests on the group as a whole and in select patient subgroups defined by classification by the Radiation Therapy Oncology Group (RTOG) Recursive Partitioning Analysis (RPA). Cognitive impairment as measured by specific neuropsychological tests is independently associated with poor prognosis in patients with newly diagnosed glioblastoma, and this effect remains significant even within patient subgroups defined by RTOG RPA class. Executive function and attention are the cognitive domains most closely associated with prognosis in this analysis.

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