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Pretreatment neuropsychological deficits in children with brain tumors.

Iuvone L, Peruzzi L, Colosimo C, Tamburrini G, Caldarelli M, Di Rocco C, Battaglia D, Guzzetta F, Misciagna S, Di Giannatale A, Ruggiero A, Riccardi R.

Don Gnocchi Onlus Foundation, Italy (L.I., S.M.), Division of Pediatric Oncology (L.P., A.D.G., A.R., R.R.), Department of Bio-images and Radiological Sciences (C.C.), Pediatric Neurosurgery Unit (G.T., M.C., C.D.R.), Division of Child Neuropsychiatry, Catholic University, "A. Gemelli" Hospital, Rome, Italy (D.B., F.G.).

Abstract

Treatment of childhood brain cancer has been associated with long-term cognitive morbidity in children. In the present study, the cognitive status of children with brain tumors was examined prior to any treatment to single out the role of tumor and tumor-related factors in cognitive deficits. Eighty-three children with newly diagnosed brain tumors (mean age, 8.6 years; range, 7 months to 16.6 years; median, 9.4 years) completed an extensive battery of age-related tests to assess cognitive function before any therapeutic intervention. Magnetic resonance imaging (MRI) was used to determine tumor site and volume and tumor-related factors. Performance under test was compared with symptom duration, neurological status, epilepsy, and MRI. Cognitive difficulties are detected at diagnosis in as many as 50% of patients for some cognitive domains; 6% of patients present with true-diagnosed mental retardation. The location of the tumor is the principal determinant of cognitive deficits, with major impairment in children with cortical tumors. Symptom duration and the presence of epilepsy are significantly associated with neuropsychological disabilities, while neuroradiological tumor-related variables do not correlate clearly with neurocognitive performance. The knowledge of the pre-existing cognitive deficits is critical to evaluate the results of treatment, providing a baseline for assessing the true impact of therapy in determining cognitive decline. In addition, the study suggests that some clinical variables require careful monitoring, because they could be specifically implicated in the neuropsychological outcome; the efforts to reduce the impact of these factors could ameliorate long-term prognosis.

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