

BRAIN TUMORS

RADIOTHERAPY FOR LOW-GRADE ASTROCYTOMAS

The effect of radiotherapy on the survival of 143 children with low-grade (grade 1 or 2) astrocytomas was evaluated at the Royal Manchester Children's Hospital, and Christie Hospital and Holt Radium Institute, Manchester, UK. The 5-year survival was 85%, 10-year 79%, and 15-year 72%. Children over 3 years of age had a better prognosis than younger children. Peripherally located tumors, with their easier access and more complete resection, have a significantly better survival outcome than deep-seated tumors. In 68 children whose tumors were completely resected and who required no radiation, the 15-year survival rate was 90%; if radiotherapy was given for some reason the 15-year survival fell to 75% for this peripheral tumor group. All 9 children with deep-seated tumors died when treated with surgery alone; a 15-year survival rate of 64% was obtained in patients who received radiation after surgery for deep tumors. (West CGH et al. Radiotherapy in the treatment of low-grade astrocytomas. I. A survival analysis. Child's Nerv Syst August 1995;11:438-442). (Respond: Mr Charles GH West, Department of Neurological Surgery, Royal Manchester Children's Hospital, Manchester M27 1HA, UK).

COMMENT. Radiation therapy had no benefit and in some cases, an adverse effect in children with superficial tumors that were amenable to complete or near complete resection. In deep seated tumors incompletely resected, radiation after surgery resulted in a significant improvement in survival rates. While radiotherapy may improve the survival rate in children with deep tumors, it can adversely affect the quality of life by causing long-term cognitive dysfunction.

RADIOTHERAPY-INDUCED COGNITIVE SEQUELAE

Long-term neurological and neuropsychological outcome in 25 irradiated children <15-years of age and 25 treated with surgery alone for low-grade astrocytoma was evaluated by two neurosurgeons and two psychologists independently at the Royal Manchester Children's Hospital, UK. Neurological function was not different in the irradiated group compared to the non-irradiated patients. In all neuropsychological tests used to assess intelligence, word reading, memory, learning and information processing, the performance of children with cranial radiation therapy was worse than those treated by surgery alone, and significant changes occurred in tests of IQ and information processing. Special education was required more frequently in the irradiated group. Both supratentorial tumor radiotherapy and local field irradiation to the posterior fossa for cerebellar tumors produced significant cognitive impairments. (Chadderton RD et al. Radiotherapy in the treatment of low-grade astrocytomas. II. The physical and cognitive sequelae. Child's Nerv Syst August 1995;11:443-448). (Respond: Mr CGH West, Department of Neurological Surgery, Royal Manchester Children's Hospital, Manchester M27 1HA, UK).

COMMENT. This study confirms previous reports of cognitive impairments following irradiation for supratentorial tumors in children. Additionally, even local field irradiation to the posterior fossa can result in learning and academic problems. Children receiving cranial radiation therapy, locally or to the whole brain, should be followed with neuropsychological testing for longer than 3 years to