

# PEDIATRIC NEUROLOGY BRIEFS

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## INTRACRANIAL TUMORS

### CHEMOTHERAPY FOR BRAIN TUMORS

The results of chemotherapy in the treatment of selected brain tumors in children are reviewed by the Division of Pediatric Hematology/Oncology, Children's Hospital and Health Center, San Diego. Chemotherapy was advocated in the following tumors: Malignant astrocytoma, glioblastoma multiforme, high risk medulloblastoma, malignant germ cell tumor, pinealoma, pinealoblastoma, and non-Hodgkin lymphoma. It was also considered of value in selected cases of optic glioma, brain stem glioma, ependymoma, and germinoma. The Children's Cancer Study Group and the Pediatric Oncology Group in the United States and the International Society of Pediatric Oncology in Europe have reported results favoring the addition of chemotherapy and a multimodal treatment of brain tumors. In patients with cerebral hemisphere astrocytoma, the 5 year relapse free survival rate for those receiving chemotherapy (vincristine, l-mustine, and prednisone for one year) was 45%, in contrast to 13% for those receiving neurosurgery and radiation therapy alone. There are reports of recurrent gliomas responding to chemotherapy for short periods. The authors favored chemotherapy for progressive optic gliomas to minimize the risk of adverse irradiation associated side effects in young children. In brainstem gliomas, chemotherapy is of unproved benefit but is being investigated because of the suboptimal current survival rate of approximately 20%. In patients with medulloblastoma chemotherapy improved survival rates for children with subtotal tumor excision, children who were less than 2 years of age, and children with tumor extension into the brain stem. Those with small localized medulloblastomas may be given craniospinal irradiation after an attempt at surgical resection; those with extensive local or disseminated lesions may be best treated with neurosurgery, irradiation, and chemotherapy. Young children less than 3 years of age may receive chemotherapy in an attempt to delay radiotherapy, potentially reducing the risk of postirradiation side effects. In patients with large, invasive tumors plus CSF dissemination, the 5 year disease free survival rate with chemotherapy added was 45% versus 0% in patients not so treated. Children with large tumors without CSF spread of

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tumor also showed a trend that was less dramatic toward an increased disease free survival time with chemotherapy. Irrespective of the therapeutic regimen, children less than 4 years of age fared worse than older children. In ependymomas, some responses to chemotherapy have been noted in recurrent tumors but a consistently effective drug program has not been identified. Malignant germ cell tumors are often given combination chemotherapy plus irradiation. Recently, chemotherapy has also been used for germinomas to reduce subsequent irradiation dosage. Chemotherapy has also been used along with radiotherapy for the treatment of pinealomas and pinealoma blastomas which usually do not respond well to radiotherapy alone. Acute leukemias (especially lymphoblastic leukemia, and non-Hodgkin lymphoma) may involve the central nervous system in children. Non-Hodgkin lymphoma of the brain is being reported with increasing frequency in patients with AIDS and is projected to be one of the most common neurologic neoplasms within several years. Treatment of brain lymphoma has traditionally involved systemic chemotherapy, intrathecal chemotherapy, and irradiation. Patients with AIDS have difficulty tolerating large doses of chemotherapy and may benefit from antiretroviral and immunomodulator drugs in future trials.

The long-term adverse effects of therapy of brain tumors have assumed greater importance since increasing numbers of children survive treatment programs. Approximately one-half may manifest significant intellectual or behavioral retardation, particularly in those under 3 years of age. White matter abnormalities, calcifications, and brain atrophy may be demonstrated on CT scans and MRI. Histopathologic findings after cranial irradiation have included demyelination and mineralizing microangiopathy. Short stature resulting from growth hormone secretory dysfunction occurs in brain tumor patients who received radiation therapy and hypothyroidism may occur after craniospinal irradiation. (Kadota R P et al. Brain tumors in children. J Pediatr April 1989; 114:511-519).

COMMENT. An estimated 1200-1500 new cases of brain tumors will be diagnosed annually in American children less than 15 years of age. Compared with other childhood cancers, brain tumors have not been intensively studied by pediatric oncologists. With the recent advances in chemotherapy and the concerns regarding adverse effects of radiotherapy, oncologists are playing a larger role in the treatment of brain tumors in children. Well designed controlled studies in multiple collaborative centers will be necessary to prove the effectiveness of this form of therapy.

#### DYSPLASTIC GANGLIOCYTOMA AND PARTIAL SEIZURES

The clinical, radiologic and EEG features of three children with dysplastic gangliocytoma of the cerebral hemispheres and drug resistant partial seizures are described from the Comprehensive Epilepsy Center and Department of Neurology, Miami Children's Hospital, Miami, FL. A two year old girl had recurrent right-sided focal motor seizures that began within hours of birth; a 15 year old boy had habitual left-sided sensory seizures and infrequent grand mal attacks beginning at age three; and an eight month old boy was hospitalized following an episode of head trauma with unconsciousness and apnea followed by recurrent seizures consisting of staring, eye blinking and left versive head movement. None of the cases manifested a mass effect