

geographically separated from clinics for adults. Patients have difficulty separating from a team that has cared for them for two decades. The authors comment that shunt malfunction is a primary consideration in long-term care of MM, and adult colleagues need to become familiar with this problem. Learning and attention deficit disorders are additional troublesome complications of MM that require specialized treatment.

BRAIN TUMORS

CHANGING EPIDEMIOLOGY OF PEDIATRIC BRAIN TUMORS

Neurosurgeons at the Hospital for Sick Children, Toronto, Canada, analyzed and classified 1,866 surgical pathology cases of brain tumors in children under age 19 years, treated 1980-2008. Astrocytomas accounted for 39.4%, (low-grade I/II 32.3%, grades III/IV 7.1%), medulloblastoma (10.6%), ependymoma (7.0%), craniopharyngioma (6.8%), meningioma (1.7%), and hypothalamic hamartoma (1.6%). Male preponderance (56.8%) occurred in all age groups, and particularly with medulloblastoma (M/F, 3/2). Classified by age group, ependymomas peaked at 0-2 years, and medulloblastoma at 3-5 years; astrocytomas increased in prevalence up to 9-11 years and then decreased. Distribution of tumors over the 3 decades showed little variation, except for medulloblastoma that showed a decreased percentage in 1990-99, and pilocytic astrocytoma (grade I) that increased steadily from 0.36% in 1980-89, to 7.32% in 2000-2008. The findings were consistent with published series from other countries, and changes in epidemiology may be attributed to changing classification systems, improved imaging and developments in epilepsy surgery. Under-reporting in the older groups (>15 years) may occur due to referrals to adult centers. (Kaderali Z, Lamberti-Pasculli M, Rutka JT. The changing epidemiology of paediatric brain tumours: a review from the Hospital for Sick Children. **Childs Nerv Syst** July 2009;25:787-793). (Respond: Dr JT Rutka, Division of Neurosurgery, The Hospital for Sick Children, The University of Toronto, Suite 1503, 555 University Ave, Toronto, Ontario, Canada M5G 1X8. E-mail: james.rutka@sickkids.ca).

COMMENT. The National Cancer Institute registry lists 488 CNS tumors reported in children in the state of Connecticut over a 39-year period; 467 were intracranial and 21 were spinal. Astrocytomas accounted for 28%, medulloblastomas 25%, ependymomas 9%, craniopharyngiomas 9%, and glioblastoma multiforme 9%. (Farwell JR et al. **Cancer** 1977;40:3123-3132). The incidence of medulloblastoma in the Connecticut series is double that found in the Toronto patients, whereas the percentages of other CNS tumors are similar. Of 6 series of childhood brain tumors (1949-1980) tabulated by Cohen ME and Duffner PK (**Brain Tumors in Children: Principles of Diagnosis and Treatment**. New York, Raven Press, 1984), one series reports medulloblastoma in 10.6% of 425 cases, similar to the Toronto series, whereas 5 series show percentages varying from 16.3% to 25% (mean, 20%). Over a 30-year period the incidence of specific types of childhood brain tumors had not changed appreciably. With an emerging microRNA brain tumor classification, the epidemiology of childhood brain tumors becomes more complicated. The influence of environmental risk factors (ionizing radiation, chemotherapeutic agents) is thought to be small (Baldwin RT et al. **Toxicol Appl Pharmacol** 2004;199:118-131).