Nolan Altman, Richard S. Boyer, James A. Brunberg, Allen D. Elster, Ajax E. George, David B. Hackney, Robert B. Lufkin, Jeffrey S. Ross, Joel D. Swartz, Jane L. Weissman, and Samuel M. Wolpert

Brain Tumors and Cysts


The study presents clinical and immunohistologic findings of five patients with neurocytomas. These lesions are characterized by intraventricular location, occurrence in young adults, favorable prognosis, and histologic appearance similar to oligodendrogliomas.□ J.S.R.

Phakomatoses


Forty children (8 to 16 years of age) with neurofibromatosis type 1 but no clinical evidence of either neurologic abnormality or severe intellectual dysfunction underwent MR imaging of the brain. In 25, regions of increased signal intensity were demonstrated on T2-weighted images to involve the optic tract (n = 16), basal ganglia or thalamus (n = 15), brain stem (n = 11), cerebellum (n = 7), and cortex (n = 5). Neuropsychological testing demonstrated a correlation between the presence of these MR alterations and reductions in global IQ, attention, and visuospatial function as compared with patients not having these MR alterations.□ J.A.B.

Pediatric Neuroradiology and Congenital Malformations


Two neonates with glial heterotopias of the nose, one with and the other without an intracranial connection, are presented. Distinction from a nasofrontal encephalocele was not always possible. One lesion had a fibrous stalk extending through a small supraorbital skull defect. □ R.S.B.


Two examples of cervicodorsal neurenteric cysts, one dorsal and the other ventral to the spinal cord, are presented. Associated malformations included Klippel-Feil anomaly, meningocele, and spinal dysraphism. □ R.S.B.


A single case of a plasma cell granuloma (inflammatory pseudotumor) of the brain in a 5-year-old child is described with a review of the literature of this rare lesion. □ R.S.B.


Late MR evaluation (mean, 39 months after diagnosis) of five children with hypothalamic hamartoma showed no change in size, shape, or signal intensity of the mass, suggesting confirmation of the diagnosis. □ R.S.B.


An unusual kyphotic deformity of the cervical spine in a child with Morquio syndrome produced cervical cord compression and myelopathy. □ R.S.B.


Four children had primitive neuroectodermal tumors in the pons, all of which were fatal within 13 months. □ R.S.B.


Proton MR spectroscopy was used in the evaluation of seven children with low-grade astrocytomas. The tumors were metabolically heterogeneous, which may help explain their variable biological behavior. □ R.S.B.


Clinical imaging findings of five children (11 to 16 years of age) with multiple sclerosis are presented. Symptoms and signs at initial presentation may be subtle and misleading. □ R.S.B.

Ninety-six term infants considered at high risk for having neonatal seizures secondary to hypoxic/ischemic insult at birth were prospectively evaluated in the first hour of life to determine predictive indicators of seizure risk. The highest risk of seizures was with low 5-minute Apgar score, intubation, and severe fetal acidemia.


Retrospective review of 93 children (3 years old or younger) with epidural or subdural hematoma showed that abuse was diagnosed in 47% of children with subdural and 6% of those with epidural hematoma. Epidural hematoma results from “brief linear contact forces” that commonly occur in unintentional falls, rarely from abuse.

Degenerative and Metabolic Disease and Aging


Once thought to be characteristic of Alzheimer disease, hippocampal atrophy can also be seen in the dementia associated with idiopathic Parkinson disease and in the dementia caused by vascular disease.

Stroke


Almost half of the endarterectomies being performed in the United States today are being carried out on asymptomatic patients. The authors explore this issue and conclude that the evidence for the surgical benefit of carotid endarterectomies for asymptomatic carotid lesions continues to elude us. This is important reading for all of us who are involved in carotid and MR angiography.


MELAS syndrome is the most likely of the mitochondrial disorders to be associated with a stroke. Patients with the Kearns-Sayre syndrome (a disease with a mitochondrial disorder) characteristically have a bundle-branch block and usually die from cardiac failure. A patient with the Kearns-Sayre syndrome, treated with a pacemaker, experienced a middle cerebral artery stroke thought to be caused by cardiac embolism. This interesting case thus broadens the potential causes of stroke to be considered in patients with the mitochondrial disorders.


The authors wanted to evaluate duplex criteria for determining greater than or equal to 70% carotid stenosis, and they evaluated 110 patients with duplex scans and angiograms. They found that greater than or equal to 70% stenosis can be reliably detected with duplex Doppler, and interobserver agreement was almost perfect. They used a peak systolic velocity in the internal carotid artery of more than 210 cm/s as the criterion for determination of that degree of stenosis.


An algorithm was developed to look at medically justified and unjustified stays for patients with a primary diagnosis of stroke. Surprise, surprise: there is a considerably unjustified length of stay for stroke patients, which mainly falls into waiting for rehabilitation placement.


Sixty-two patients with hemispheric transient ischemic attack were evaluated with MR. Acute ischemic lesions were seen in 31% of patients, an incidence similar to that previously reported for CT. MR does not show a dramatically higher number of acute transient ischemic attack-related infarcts, although it does demonstrate a higher proportion of cortical ischemic damage. Three figures.


Eight patients were evaluated with PET imaging within 17 hours after stroke onset, and a second, chronic-stage PET examination up to 41 days later. Registration was performed using CT. The authors document that within the area of the ultimate infarct, there exists a substantial volume of tissue with penumbral characteristics up to 17 hours after stroke onset. This could represent at-risk tissue that could be saved with appropriate therapy, and they hypothesize that this could mean extending the therapeutic window to 17 hours in appropriately selected patients.

Vascular Lesions and Malformations


A review of 38 consecutive patients with symptomatic giant aneurysms of the anterior circle of Willis, treated with direct clip reconstruction or trapping, using intraoperative angiographic control. Good or excellent clinical outcome was obtained in 71%. Four figures with CT and angiograms.
A 13-year-old boy had spontaneous thrombosis of a cerebral venous malformation that led to infarction and death. This case illustrates that these malformations are not always benign. R.S.B.

Functional Neuroradiology
The results of functional MR evaluations obtained during motor or language task activation as a component of preoperative surgical planning are reported in five patients with intracranial gliomas. Activated regions adjacent to tumor were found to be displaced by mass effect, and diminished levels of activation were noted to correspond to the presence of neurologic defect in some patients. MR echo-planar technique, activation paradigms, and procedures for data analysis are presented. R.S.B.

Magnetic Resonance Spectroscopy
In vivo proton MR spectroscopy and single-voxel spectral analysis were used in rats to characterize N-acetyl-aspartate (NAA), lactate, and other spectroscopically visible metabolites over a period of 72 hours after temporary or permanent middle cerebral artery occlusion. Rapid depletion of NAA within 1.3 hours of ischemia identified areas that were destined for infarction. Increased lactate levels were a sensitive early marker of ischemia. Findings are illustrated and discussed both in relation to underlying histologic alteration and in relation to potential therapeutic strategies. R.S.B.