**Brain Tumors and Cysts**


An excellent review of animal models available for those involved in brain tumor research. Included are spontaneous tumors, carcinogen-induced tumors, virus-induced tumors, models based on cell or tissue transplantation, and transgenic models. This paper is not for the general reader, but will be of great interest to academicians and researchers.[ADE]

**Degenerative and Metabolic Disease and Aging**


One hypothesis about the origin of amyotrophic lateral sclerosis implicates abnormal accumulation of glutamate (the primary excitatory central nervous system neurotransmitter) at synapses. Experimentally, riluzole inhibits the presynaptic release and postsynaptic actions of glutamate. This double-blind, placebo-controlled, prospective study was carefully performed and analyzed. Survival in the riluzole group was statistically greater than survival in the placebo group; the effect was greatest in patients with bulbar-onset amyotrophic lateral sclerosis, with only a “trend” in patients with limb-onset disease. Riluzole also slowed the deterioration of muscle strength. So far, therapy for amyotrophic lateral sclerosis has been inadequate. These results might constitute a breakthrough.[JLW]


This review article clarifies some mechanisms briefly alluded to in the preceding article. Glutamate, the principal excitatory CNS neurotransmitter, is involved in cognition, memory, movement, sensation. Overstimulation of glutamate receptors may cause “excitotoxicity” and cell death in acute injury (stroke, trauma, hypoglycemia, epilepsy) and chronic injury (amyotrophic lateral sclerosis). The article goes into exquisite technical detail, but it is important and worth skimming.[JLW]


Volumes of the basal ganglia structures were significantly reduced in asymptomatic at-risk siblings of Huntington patients with marker-positive genes, but not in siblings with marker-negative genes.[SMW]


Magnetic resonance (MR) findings in 22 patients with spasmodic torticollis were compared with those of 28 age-matched control subjects. T2 values in the putamen and pallidum on both sides were significantly higher in the patients than in the controls. The authors speculate that the findings could represent focal gliosis.[SMW]


In this interesting case report, the authors describe a patient with central pontine myelinolysis in whom an MR study revealed hypointense signal on T2-weighted sequences in the basis pontis 1 week before the onset of clinical signs of the disease while the patient was still markedly hypotensive. On a second MR image obtained 1 week later, the typical appearances of central pontine myelinolysis, hypointense areas on T1-weighted and hyperintense on T2-weighted images, were seen.[SMW]


Water-suppressed proton MR spectroscopic imaging measurements of N-acetylaspartate may be a sensitive way to measure selective neuronal loss of patients with hypoxic-ischemic encephalopathy as shown in this single case report.[NA]
Hematologic Disorders


Bilateral epistaxis, retinal hemorrhages, and bilateral central-artery occlusions were among the clinical manifestations of "hyperviscosity syndrome." Plain films of skull and hip showed lytic foci. "A diagnostic procedure was performed": monoclonal protein identified in blood and urine clinched the diagnosis of (you guess?) multiple myeloma. □JLW

Inflammatory Disease


This is the first documentation of central nervous system infection by human herpesvirus-6. Autopsy revealed damage to astrocytes and myelin in frontal white matter, and to neurons in hippocampus gray matter. Other herpesvirus infections have a propensity for the limbic system. Unfortunately, no imaging studies are included. □JLW


Postherpetic neuralgia is pain in one to three dermatomes after resolution of cutaneous herpes zoster in the same distribution. Ongoing ganglion inflammation (zoster sine herpete) may cause postherpetic neuralgia. Current doses of oral acyclovir are not effective, but higher oral doses, or intravenous therapy, may attenuate or eliminate the pain. Good news for sufferers. □JLW

Mandible and Maxilla


Plastic mandibular models generated by three-dimensional computed tomography (CT) reconstruction and dental impression type models of the maxilla were each evaluated for usefulness for the head and neck surgeon. The first type was expensive and technologically intensive and the second type was simple but limited. Both models were valuable in certain clinical situations and both had disadvantages of cost, time, and possible inaccuracies caused by image artifacts. □RBL

Neck and Nasopharynx


Zenker Pharyngeal Diverticulum results from an outpouching in the inferior constrictor muscle known as Killian Dehiscence. The authors present the sixth reported case of carcinoma-in-situ occurring within a Zenker diverticulum. They emphasize that cigarette smoking, hemoptysis, previous upper-aerodigestive-tract malignancy, and a prolonged history of the diverticulum have been identified as risk factors. □JDS


This is a long, mistitled case report of a child who (presumably) performed repeated Valsalva maneuvers, causing alveolar rupture. The authors state that all "spontaneous" cervical emphysema has a cause "if closely studied." Their bias is apparent: this is really an article on various causes of cervical emphysema. Captions for the two plain films (neck, chest) and lung-window CT images (neck, chest) describe arrows pointing to the emphysema, but the arrows are nowhere to be seen. □JLW


The authors present four cases, illustrated with three CT images and one xeroradiograph. Each case (and figure) purports to show an abnormally prominent greater cornu of the hyoid. All patients had the offending greater cornu removed, with relief of symptoms. Nonetheless, "hyoid greater cornu" syndrome, caused by irritation of the sympathetic plexus around carotid artery or sinus branch of glossopharyngeal nerve, remains unconvincing. □JLW


New-onset stridor in adolescents is rare. A 14-year-old with stridor had a tracheal papilloma diagnosed on MR (one sagittal image), fiberoptic bronchoscopy, and frozen-section pathology. The final pathologic diagnosis was mucoepidermoid carcinoma of the trachea, which is rare, and occurs most frequently in teenagers and young adults. Another item for your "laundry list." □JLW

More than 90% of thyroid carcinomas are well-differentiated. This is a thorough review emphasizing the pathogenesis, diagnosis, and treatment of these lesions. Much of the information in this thorough review is highly pertinent to contemporary head and neck radiology. □JJS

**Ophthalmologic Radiology**


This (unintentionally?) amusing study presents important findings. A 1-year prospective study found 24 eye injuries in 21 major-league players, or 1.9 eye injuries per 100,000 “player-innings.” Batted balls, eye-rubbing, foreign bodies, and the shortstop’s knee accounted for most of the injuries. Of the 21 players, only one wore safety glasses! These players’ potential to influence eye-protection habits by setting a (good) example is (as it were) overlooked. □JJS

**Nose, Paranasal Sinuses, Face, and Oral Cavity**


Fibrous dysplasia involving the paranasal sinuses is a rare subset of craniofacial fibrous dysplasia. Medullary bone is replaced by structurally unsound fibrous tissue. This may result in recurrent infections, mucocele formation, nasal airway obstruction, and facial pain. An excellent and well-illustrated review presenting two original cases clearly defined with high quality CT scans. □JJS

**Pediatric Neuroradiology**


This retrospective study compared “surveillance scanning” (CT, MR) to history and physical examination for detecting tumor recurrence after therapy for medulloblastoma (posterior fossa primitive neuroectodermal tumor). Of 86 children, four (clinically asymptomatic) recurrences were detected by scans, and 19 recurrences were detected clinically. One problem with the study is that MR, introduced during the study period (1980–1991), might have detected disease missed on CT. The authors acknowledge this. Their conclusion, that surveillance scanning has limited clinical value, is debatable, because they studied a tumor for which cure after recurrence is, in their words, “rare.” □JJS


The extent of neuronal migration disease is important in surgical planning for epilepsy patients because the best prognosis is seen when the lesion and epileptogenic region are completely removed. Interictal FDG-positron emission tomography findings were correlated with MR findings in 17 epileptic patients with neuronal migration disorders. Fifteen patients with abnormal MR findings had focal hypometabolic regions in nine cases and a unique finding of displaced metabolic activity of normal gray matter in six cases. Three of the nonhypometabolic cases showed larger lesions on positron emission tomography than on MR. □NA


Neuropathologic tissue obtained at the time of hemispherectomy from a 15-year-old with hemimegalencephaly and persisting seizures is correlated with MR imaging alteration. □JJS


Two episodes of intrauterine asphyxia are correlated with neuropathologic findings and with a review of the literature. Although intensity and duration of asphyxia is difficult to characterize, insults occurring before 24 weeks of gestation had bilateral pallidal necrosis as a common feature, while an insult between 26 and 34 weeks of gestation was commonly associated with thalamic and brainstem necrosis. No images are included. □JJS


Four patients demonstrate diffuse white matter disease of the cerebrum and parts of the cerebellum on CT and MR examinations with minimal clinical findings. Progressive clinical leukodystrophy was identified without abnormalities found in the evaluation for known metabolic and degenerative diseases. This progression was not reflected on the MR or CT examinations. MR spectroscopy demonstrated marked decrease in the N-acetylaspartic acid, choline, and creatine of the white matter relative to gray matter. This appeared to be specific in this distinct clinical pathological syndrome, because it has not been previously reported in other white matter diseases. □NA

**Phakomatoses**


An interesting paper. Patients with neurofibromatosis type 1 and focal areas of high intensity on T2-weighted MR had a much higher risk for impaired academic achievement than patients with neurofibromatosis type 1 who did not have the T2 changes. Furthermore, the frequency of learning disability in the neurofibromatosis population was much higher than that expected for the general population. □SMW
Seizure Disorders


Lateralization of temporal lobe epilepsy of 10 patients who had surgical treatment of medically intractable epilepsy was compared with findings in 5 healthy control subjects using the reduced N-acetylaspartate-to-creatine ratio. This ratio showed agreement with the side of clinical-electroencephalogram lateralization and MR abnormalities in all cases. One patient had no MR abnormalities but showed MR spectroscopy abnormalities confirmed pathologically as mild hippocampal sclerosis, suggesting that MR spectroscopy may be able to show neuronal loss in these patients with a greater sensitivity than MR.


This paper, in an Acta Neurologica volume devoted to epilepsy surgery, regards the value of volumetric MR examination of the mesial temporal lobe structures in patients with clinical temporal lobe seizures. Numerous papers on the neurophysiology, value of subdural electrodes, magnetic source imaging, MR, and functional changes including positron emission tomography in patients with temporal lobe problems are discussed in this volume.


A technique for obtaining accurate baseline postoperative examinations with a volumetric MR technique was used in 25 patients. This method lends itself to further work to evaluate the efficacy of lesionectomy versus an en-bloc resection as related to the volume of brain removed and the long-term functional follow-up.


The authors found that MR of the temporal lobe is more accurate than single-photon emission CT in providing accurate seizure lateralization. More specifically, hippocampal volume measurements correctly lateralized seizures in 86% of cases, whereas single-photon emission CT correctly lateralized seizures in 45% of cases.


An interesting case report of a patient with seizures studied with a conventional 1.5T MR system with a flash sequence. The images acquired every 10 seconds in blocks of 60 images were obtained during clinical seizures and showed sequential activation associated with specific gyri.


Phosphorus MR single-photon emission CT was used in eight patients with frontal lobe epilepsy determined by ictal electroencephalogram recordings and with normal MR findings. Within the epileptogenic frontal lobe the mean pH was significantly increased in five patients compared with the contralateral frontal lobe and with control subjects. The phosphomonoester levels were decreased asymmetrically, correctly lateralizing the frontal epileptogenic foci in seven of eight patients. The mean inorganic phosphate levels failed to provide lateralizing information, because they were not consistently increased within the epileptogenic focus as in patients with temporal lobe epilepsy.

Spine


The authors of this interesting paper are rehabilitation physicians. They discuss pathophysiology, manifestations, and management of complications encountered both in the second year and more than 30 years after spinal cord injury. Psychosocial issues include employment, sexual function, parenthood, aging, and life satisfaction. These are important clinical correlates of conditions neuroradiologists often diagnose without pausing to consider the ramifications.


Describes a rare cause of back pain with good imaging findings, color operative photos, and discussion. I had never heard of this entity until I encountered my first case about 3 years ago.


Patients with chronic neck pain after whiplash underwent a therapeutic trial injection of local anesthetic into dorsal rami supplying cervical zygoapophyseal joints. If their pain diminished, they were randomized into a group that received bupivacaine or a group that received betamethasone (local anesthetic or steroids introduced into zygoapophyseal joints under fluoroscopic guidance). Duration of pain relief was 3.5 days for bupivacaine, 3.0 days for betamethasone. The authors conclude that intraarticular steroid therapy is not worth the risk and radiation exposure. The study is nicely designed, the discussion is thoughtful and thought-provoking.


This accompanying editorial provides some interesting statistics on “late whiplash syndrome.” The author firmly states that there is now enough evidence that steroid injection into apophyseal joints is ineffective. He believes the practice should be stopped, perhaps by discontinuing third-party reimbursement. An unexpected proposal.
Stroke


Pre- and postoperative CT or MR was monitored in patients undergoing carotid endarterectomy, with monitoring of the endarterectomy with transcranial Doppler. There was a significant correlation between the number of embolic signals during surgical dissection of the carotid artery and occurrence of intraoperative infarcts. Two MR figures.


Fifteen patients with a single subcortical lesion were evaluated for depression as well as with single-photon emission CT using $^{99m}$Tc hexamethylpropyleneamine oxime. A number of flow values were lower in the depressed patients than the nondepressed, only in the mesial temporal cortex of the affected hemisphere. Authors suggest the temporal lobe hypoperfusion reflects dysfunction of the limbic system, which may underlie depressive phenomenology. Two color single-photon emission CT figures.


Six patients with ischemic stroke were evaluated in the acute stage to the chronic stage with proton MR spectroscopy. No clear correlation was found between the level of N-acetylaspartate or lactate in the acute stage of stroke and the clinical outcome. However, the study group is too small to draw any definite conclusions regarding the prognostic information of spectroscopy.

Temporal Bone


This is a frustratingly vague retrospective study of 1194 patients who were 70 years or older when first seen at a “dizziness clinic.” Odd results: 21% of patients remained “undiagnosed,” 39% were “strongly suspected” of having paroxysmal positional vertigo. “Cardiovascular” causes are included with the 8.7% with “nonvestibular, non-neurologic” disease, but another 6.3% were diagnosed with “cerebrovascular disease.” This distinction is not explained. Seventeen patients had tumors: “most” were acoustic neuromas or meningiomas. It is unclear when (and which) imaging studies were used. The conclusion restates the introduction. What has been learned?

Trauma


The efficacy of plain skull radiographs, CT, and MR after mild head injury is reviewed with an extensive list of references. Strategies for obtaining imaging studies relative to Glasgow Coma Scale, clinical course, and type of injury are reviewed.