Ophthalmologic Radiology


Color vision is encoded in the ventromedial occipitotemporal cortex. Magnetic resonance (MR) and single-photon emission computed tomography (CT) demonstrate occipitotemporal infarcts in two patients with clinically demonstrable inferior quadratic achromatopsia in superior quadrantanopia. Both patients were unaware of their color vision disturbance, and the neuroradiologist may be in a unique position to suggest that such a clinical defect may be present when lesions are demonstrated in this vicinity.


Severe orbital pain followed by vertical diplopia was experienced in a 22-year-old diver. A coronal CT image demonstrates an extracranial mass arising in the superior portion of the left orbit, which at surgery represented a spontaneous hemorrhage. Follow-up CT 5 weeks later demonstrates complete resolution of the lesion.


The authors report two human immunodeficiency virus-positive 35-year-old men with bilateral proptosis. Biopsy in both cases revealed small-cell, noncleaved, non-Hodgkin lymphoma. The authors indicate that bilateral orbital involvement makes these cases unique. A single axial CT demonstrates large amorphous bilateral intracranial masses.


Twenty healthy volunteers underwent extensive MR imaging and ultrasound examinations of the extraocular muscles. The authors conclude that ultrasound measurements of muscle size, particularly those of the inferior and lateral rectus muscles, should be interpreted cautiously.

Spine


The authors performed preoperative and postoperative MR imaging of the lumbar spine in 41 patients treated with microsurgery or with percutaneous nucleotomy for herniation. They showed a variety of epidural changes with MR of the operated space on the first postoperative day with a mass mimicking the preoperative disk herniation in 61% of patients. The MR findings had no correlation with the clinical outcome of the patients. They also noted scar formation in patients who had undergone percutaneous nucleotomy. Three figures.

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Review of the results of resection of the lordotic segment cephalad to the apical vertebra of a kyphotic deformity in 39 patients who had myelomeningocele. Twenty-five of the patients maintained at least a 50% correction over the follow-up period, with only 2 patients showing an increased kyphosis. The authors suggest that the primary indication for surgical invention is clinical manifestations of deformity rather than radiographic measurements, and this kyphotic deformity can be treated by resection of the cephalad end of the kyphosis.□J.S.R.


This review article touches on all aspects of management of cervical spondylotic myelopathy, including clinical evaluation, and a variety of considerations concerning anterior and posterior surgical treatments at both single and multiple levels of abnormality.□J.S.R.


Thirty-six patients who had myelomeningocele at the sacral level and were followed for an average of 10 years. Authors found a decline in the ability to walk in 11 of 35 patients. Breakdown of skin and soft-tissue infections on the metatarsal heads and of the heal were seen in 23 patients, respectively. Thirty-three of the patients have had a total of 371 orthopedic procedures, including a variety of tendinous procedures, osteotomies, soft-tissue releases and debridements, amputations, and arthrodoses of the lower extremities or spine. The authors conclude that the outcomes from adults who have sacral myelomeningocele is poorer than those reported for children. □J.S.R.

Interventional Neuroradiology


The authors present their treatment of saccular aneurysms using the Guglielmi detachable coil in patients with moyamoya disease. They treated three patients with four aneurysms of the posterior circulation. Near-total occlusion was achieved in three aneurysms and subtotal occlusion achieved in one aneurysm.□J.S.R.

Pediatric Neuroradiology and Congenital Malformations


In 40 term neonates with hypoxic-ischemic encephalopathy the results of cranial sonography and MR imaging are compared. Results of the two imaging modalities are then independently correlated with patient clinical outcome at 1 year of age. Although sonography successfully identified all lesions associated with a recognizable poor outcome at 1 year, 11 of the 15 subjects with normal clinical outcomes at this time had abnormalities of the thalami and basal ganglia demonstrated with MR imaging during the neonatal period. The greater sensitivity of inversion-recovery MR imaging techniques, relative to sonography, for the detection and location of brain alteration associated with hypoxia-ischemia is discussed.□J.A.B.


The authors performed three-dimensional time-of-flight MR angiography in 12 children with suspected or angiographically proved moyamoya disease. They saw distinct moyamoya vessels in 8 patients, and the primary abnormalities were shown in 10 of 12 patients. They recommend that MR angiography be the choice for selecting patients that undergo conventional angiography. Six figures with MR angiography and angiographic correlation. □J.S.R.

Stroke


A retrospective cohort study on 215 patients with asymptomatic carotid stenosis in which those who underwent endarterectomy are compared with medical treatment. Authors found no statistically significant overall difference at 5 years between surgically and medically treated patients with asymptomatic carotid stenosis, in terms of subsequent ipsilateral stroke, “any” stroke, or survival free of any stroke.


Evaluation of the mid-sagittal corpus callosal area on T1-weighted images in patients with lacunar infarction and extensive white matter abnormalities, compared with the Wechsler Adult Intelligence Scale. The subjects compared with age- and sex-matched controls had significantly smaller callosal area; this also related to intelligence quotient. The authors postulate that callosal atrophy reflects the severity and extent of white matter damage associated with decreased oxygen metabolism. One MR figure. □J.S.R.
Cerebral Blood Flow


The authors examined volunteers and patients before and after administration of acetazolamide and analyzed the data to show vasoreactivity. The arterial trees of the anterior middle and posterior cerebri were measured in terms of pixel counts before and after acetazolamide administration. They noted normal vasoreactivity of the right middle cerebral artery distribution of 71% and of the left 74%. They noted less vasoreactivity in patients who had stenotic middle cerebral arteries than in those who had nonstenotic arteries. They conclude that this is potentially useful because it provides the vascular anatomy but also can access the vasoreactivity of individual arterial territories. One MR figure.


A group of Stanford neuroradiologists (plus one neurosurgeon and some statisticians) looked at 29 patients with at least one occluded internal carotid artery. Using spin-echo sequences and three-dimensional phase-contrast MR angiography, the authors found no watershed infarcts in patients with large posterior communicating arteries on the sides of the occluded carotids, and many watershed infarcts in patients with small posterior communicating arteries. The article is erudite, interesting, and nicely illustrated, but the authors are coy about the clinical implications of their findings.


Fludeoxyglucose F18 uptake was noted to be substantially increased in the right lower neck before surgical exploration, which revealed a parathyroid carcinoma. The authors hypothesized that the relative degree of fludeoxyglucose F18 uptake may correspond to histologic grade allowing for differentiation of benign from malignant parathyroid tumors. Nonspecifically abnormal technetium-thallium subtraction scan and contrast-enhanced CT are also illustrated.


This purely clinical article extensively reviews paraneoplastic syndromes associated with squamous cell carcinoma, lymphoma, and thymoma, as well as thyroid and parathyroid neoplasms, glomus tumors, and neuroblastomas.


Small-cell carcinomas account for 25% to 36% of all lung cancers, and only 4% occur in extrapulmonary sites such as the larynx. Oat cell carcinoma is the most well-known pathologic subtype. Satisfactory-quality axial CT scans demonstrate a subglottic mass in one patient and a supraglottic mass in another. This lesion is rare in the larynx and is associated with early, widespread metastases. The tumor is believed to arise from argyrophilic Kulchitsky cells in the laryngeal mucosa.

Stenosis of the right internal auditory canal secondary to a hyperostotic lesion arising from the postero-medial aspect of the internal auditory canal was discovered with axial CT (illustrated) in a 59-year-old woman with a history of severe vertigo. At surgery, a bilobed bony mass was found in this location associated with a tethered loop of the anterior internal carotid artery between the two lobes compressing the vestibulocochlear neural bundle. Histologic examination was consistent with osteoma. The authors hypothesize that constant pulsations of the aberrant anterior internal carotid artery along the posterior wall of the internal auditory canal may have caused periosteal irritation and induced new bone formation. They indicate that MR (not illustrated) failed to reveal any abnormal or pathologic process, even in retrospect. J.D.S.


High-quality axial CT images demonstrate symmetric bulbous lateral internal auditory canal lesions. Absent bone partition between the fundus and basal cochlear turn in two boys with progressive bilateral mixed hearing loss. The authors emphasize the strong association of perilymphatic gushers during stapes manipulation as intracranial pressure is directly transmitted through the perilymphatic space to the stapes footplate in these patients. The cochlear aqueducts were normal bilaterally in both patients. The conductive component of the hearing loss is the result of the increased pressure within the vestibule. Superb addition to the literature on this subject. J.D.S.


High-quality axial and coronal CT images demonstrate a lytic lesion at the petrous squamous junction on the left in a patient with an otoscopically seen mass in the left external auditory canal. The lesion extended into the epitympanum. An axial T2-weighted image and a coronal enhanced T1-weighted image revealed that the mass has a short T2 relaxation time and faintly enhanced with gadolinium. These images also revealed impingement on the undersurface of the temporal lobe. Reparative cell granuloma was diagnosed pathologically. There was a history of trauma 3 years earlier. There is a rather scattered discussion of other giant cell lesions. J.D.S.


Since 1979, 51 patients with radiographic evidence of acoustic neuroma were prospectively followed. Patients were selected for this conservative approach based on age, medical condition, tumor size, and other factors. A significant number of patients may be safely followed with regular imaging studies and never require treatment. R.B.L.


Axial CT scan and coronal T1-weighted MR images demonstrate an expansile mass in the right nasal cavity with secondary obstructive debris in the right frontal sinus. At surgery, a massive infected concha bullosa was identified. The thin bone rim seen on CT could have alerted the imaging specialist to the true nature of the lesion. Interestingly, the lesion is hypointense on T1-weighted images, presumably reflecting its long-standing nature. J.D.S.

Nose, Paranasal Sinuses, Face, and Oral Cavity


The incision of complications of 2108 patients undergoing endoscopic sinus surgery is compared with that in 11 series of other patients undergoing endoscopic sinus surgery and 6 series of patients who underwent traditional endonasal sinus surgery. The incidence of major perioperative complications was 0.85%, with cerebrospinal fluid leak being the most common. Other minor complications were orbital penetration and middle turbinate adhesions. There were no significant differences in major complications between this series and the other two groups. R.B.L.


The authors describe the use of an articulated arm with a computer graphics system for display of segmented and rendered three-dimensional computed tomographic data during endoscopic sinus surgery. R.B.L.

Salivary Glands


Adenoid cystic carcinoma is the most common malignant neoplasm of the minor salivary glands; these lesions frequently originate in the palate. A 37-year-old woman presented with right facial pain, ptosis, and hypesthesia of V-2 5 years after resection of an adenoid cystic carcinoma of the hard palate. Four high-quality CT images and four high-quality enhanced MR images beautifully demonstrate involvement of the pterygopalatine fossa, sphenopalatine foramen, inferior orbital fissure, vidian canal, and Meckel’s cave. There is also widening of the foramen rotundum and vidian canal. MR demonstrates enlargement of the right cavernous sinus. J.D.S.