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N Altman, R S Boyer, J A Brunberg, A D Elster, A E George, D B Hackney, V M Haughton, R B Lufkin, J S Ross, J D Swartz, J L Weissman and S M Wolpert

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

## Informatics

Pareras LG, Martin-Rodriguez JG. **Neurosurgery and the Internet: a critical analysis and a review of available resources.** *Neurosurgery* 1996;39:216–233

Use of the Internet in neurosurgery for communication, database maintenance, journal publication, and research collaboration is reviewed. Essentials of the Internet and of the World Wide Web are briefly presented. A five-page table of Internet neurosurgical resources is included. All in all, it's a nice look at how our neurosurgical colleagues are making use of their desk microcomputers. □J.A.B.

## Anatomy

Marinkovic S, Gibo H, Milisavljevic M. **The surgical anatomy of the relationships between the perforating and the leptomeningeal arteries.** *Neurosurgery* 1996;39:72–83

Leptomeningeal arterial origins of cerebral, brain stem, and cerebellar perforating vessels are reviewed, based on the dissection of 20 cadaver specimens. Detailed photographic illustrations supplement tedious descriptive textual material. There is no radiographic correlation. □J.A.B.

## Brain Tumors and Cysts

Salvati M, Cervoni L, Artico M. **High-dose radiation-induced meningiomas following acute lymphoblastic leukemia in children.** *Childs Nerv Syst* 1996;12:266–269

Three cases of delayed occurrence of meningioma in children previously treated with high-dose radiation therapy for acute lymphoblastic leukemia are reviewed. The average interval to occurrence of the meningioma was 10.4 years. The authors also review the literature experience of 49 cases of high-dose radiation-induced meningioma. □R.S.B.

Ojeman JG, Miller JW, Silbergeld DL. **Preserved function in brain invaded by tumor.** *Neurosurgery* 1996;39:253–259

In 14 patients with intrinsic cerebral gliomas, intraoperative mapping showed persistent functioning cortical structures that were well within the margins of distinct tumor involvement on CT or MR and by visual inspection. Implications for clinical deterioration after tumor resection are discussed. □J.A.B.

Giese A, Westphal M. **Glioma invasion in the central nervous system.** *Neurosurgery* 1996;39:235–252

Glial tumor invasion relating to enzymatic modification of the extracellular matrix and to other mechanisms for the modification of normal cellular mechanical barriers are comprehensively reviewed. If you are interested in what's happening to promote tumor tissue extension at the subvoxel level, spend an hour or two absorbing this material. □J.A.B.

Robinson JC, Challa VR, Jones DS, Kelly DL Jr. **Pericytosis and edema generation: a unique clinicopathological variant of meningioma.** *Neurosurgery* 1996;39:700–707

A distinct finding of proliferation of pericytes in vessel walls of meningiomas is postulated to characterize a subtype of meningothelial meningioma. A characteristic imaging finding in this group of PEG (pericytosis and edema generation) meningiomas is the presence of prominent edema in adjacent brain parenchyma. Eight patients are discussed. All presented with acute symptoms, had relatively small tumors with surrounding edema, and had good outcome after surgery. CT and histologic findings are illustrated. Mechanisms for the development of peritumoral edema are reviewed. □J.A.B.

## Neck and Nasopharynx

Harvey RT, Ibrahim H, Yousem DM, Weinstein GS. **Radio-logic findings in carcinoma-associates laryngocele.** *Ann Otol Rhinol Laryngol* 1996;105:405–408

A well-illustrated clinical case (five good-quality MR images) emphasizes the well-known association of squamous cell carcinoma with laryngocele. True vocal cord thickening and enhancement is shown. A succinct review is included. □J.D.S.

Rodriguez-De-Velasquez A, Weber AL, Montgomery W. **Extramedullary laryngeal plasmacytoma.** *Ann Otol Rhinol Laryngol* 1996;105:483–486

The rare plasmacytoma of the larynx arises in the submucosa and presents as a sessile mass with no ulceration. This lesion arose in the subglottis. Extramedullary plasmacytomas represent fewer than 1% of all head and neck malignant neoplasms. Good-quality CT and MR images illustrate this lesion. □J.D.S.

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From Miami (Fla) Children's Hospital (N.A.), Primary Children's Medical Center, Salt Lake City, Utah (R.S.B.), University Hospital, Ann Arbor, Mich (J.A.B.), Bowman Gray School of Medicine, Winston-Salem, NC (A.D.E.), New York (NY) University Medical Center (A.E.G.), Hospital of the University of Pennsylvania, Philadelphia (D.B.H.), Medical College of Wisconsin, Milwaukee (V.M.H.), University of California at Los Angeles School of Medicine (R.B.L.), the Cleveland (Ohio) Clinic Foundation (J.S.R.), the Germantown Hospital and Medical Center, Philadelphia, Pa (J.D.S.), the University of Pittsburgh (Pa) School of Medicine (J.L.W.), and New England Medical Center Hospital, Boston, Mass (S.M.W.).

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Stack BC, Ridley MB, Endicott JN. **Simultaneous squamous cell carcinoma of the head and neck and reticuloendothelial malignancies.** *Am J Otolaryngol* 1996;17:178-183

Five cases of simultaneous squamous cell carcinoma with reticuloendothelial malignancy include chronic lymphocytic lymphoma (three cases), chronic lymphocytic leukemia (one case), and multiple myeloma (one case). There are no characteristic imaging findings. These malignant neoplasms can precede, follow, or occur simultaneously with head and neck squamous cell carcinoma. □J.D.S.

Hanna E. **Squamous cell carcinoma in the thyroglossal duct cyst (TGDC): clinical presentation, diagnosis, and management.** *Am J Otolaryngol* 1996;17:353-357

Approximately 1% of thyroglossal duct cysts contain foci of malignancy. More than 90% of these cases are either papillary or follicular carcinomas. This case of squamous cell carcinoma arose within the cyst wall. A moderate-quality enhanced axial CT scan shows a large paramedian mass with irregular margins. □J.D.S.

Marcotullio D, Paduano F, Magliulo G. **Laryngopyoceles: an atypical case.** *Am J Otolaryngol* 1996;17:345-348

Three CT scans clearly demonstrate a mixed laryngopyocoele containing a long fluid level. At surgery, a laryngopyocoele was found. The laryngopyocoele is an abnormal dilatation of the appendix of the laryngeal ventricle. They are defined as internal, external or mixed, depending on their relationship to the thyrohyoid membrane. The authors mention that the laryngopyocoele is differentiated from saccular cysts pathologically by the presence of communication between the dilated appendix and the lumen of the ventricle. This case was unique because the mass arose de novo after vocal cord surgery. Presumably its development was secondary to temporary edema with resultant stenosis of the appendix. □J.D.S.

Marra S, Hotaling AJ. **Deep neck infections.** *Am J Otolaryngol* 1996;17:287-298

This highly detailed review is an excellent reference for all imaging specialists dealing with this difficult problem. The anatomic section is especially well detailed. Importantly, the authors conform (for the most part) to the current nomenclature for the fascial spaces. They specifically discuss those infections beginning in the submandibular space, lateral neck, retropharyngeal space, and prevertebral space. The article does not focus on imaging issues. □J.D.S.

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

Talmi YP, Bar-Ziv J, Yahalom R, et al. **DentaCT for evaluating mandibular and maxillary invasion in cancer of the oral cavity.** *Ann Otol Rhinol Laryngol* 1996;105:431-437

Seven good-quality Dentascan studies show erosive changes consistent with neoplasm. The authors emphasize the underrecognized use of this type of study to evaluate erosive changes. Preoperative evaluation for dental implants is certainly a better-known use of this imaging technique. □J.D.S.

Righi PD, Francis F, Aron BS, Weitzner S, Wilson KM, Gluckman J. **Sinonasal undifferentiated carcinoma: a 10-year experience.** *Am J Otolaryngol* 1996;17:167-171

Sinonasal undifferentiated carcinoma is an uncommon aggressive malignancy composed of small to medium-sized cells. Histopathologic confusion with rhabdomyosarcoma, lymphoma, or melanoma can necessitate immunohistochemical staining. A single good-quality sagittal T1-weighted contrast-enhanced MR image shows a large sinonasal mass impinging on the anterior cranial fossa. Imaging differential diagnosis is extensive. The neuroradiologist should be aware of this uncommon entity. □J.D.S.

Han MH, Chang KH, Min YG, Choi WS, Yeon KM, Han MC. **Nontraumatic prolapse of the orbital contents into the ethmoid sinus: evaluation with screening sinus CT.** *Am J Otolaryngol* 1996;17:184-189

Seven excellent-quality coronal CT images show prolapse of intraorbital contents into the ethmoidal sinus. These cases were gleaned from 67 cases of nontraumatic prolapse discovered in 1024 consecutive patients who underwent screening sinus CT. The authors insist that patients with any known history of facial trauma or sinonasal surgery were excluded from this study, and they suggest congenital weakness of the lamina papyracea and gradual displacement with aging as the cause. Preoperative identification of this phenomenon is of obvious importance. I have always assumed that these were indeed posttraumatic! □J.D.S.

Nicolai P, Redaelli de Zinis LO, Facchetti F, Maroldi R, Antonelli AR. **Craniofacial resection for vascular leiomyoma of the nasal cavity.** *Am J Otolaryngol* 1996;17:340-344

The vast majority of leiomyomas develop within the female genital tract. They are benign smooth-muscle neoplasms that are classified as either vascular, nonvascular or epithelioid (leiomyoblastoma). Axial enhanced CT and sagittal enhanced MR show an intensely enhancing mass arising in the nasal cavity and eroding through the ethmoid to extend into the cranial compartment. The authors indicate that although head and neck involvement with this type of lesion is rare, the nasal cavity is the most common site, specifically the region of the inferior and middle turbinates. □J.D.S.

Dunya IM, Salman SD, Shore JW. **Ophthalmic complications of endoscopic ethmoid surgery and their management.** *Am J Otolaryngol* 1996;17:322-331

The authors report five cases of ophthalmic complications of endoscopic sinus surgery. CT scans are included for two patients. This detailed review article is useful for any imaging specialist who examines these patients on a consistent basis. Complications discussed include penetration of the lacrimal sac, optic nerve injury, and damage to the extraocular muscles. The authors recommend that surgeons take very seriously any reported orbital wall dehiscence, particularly in the patient previously operated on. □J.D.S.

Hunter RB, Zaretsky LS, Nuovo M, April MM. **Bilateral odontogenic keratocysts of the maxillary sinus.** *Am J Otolaryngol* 1996;17:269-271

Odontogenic keratocysts are believed to arise from primordial dental lamina or its epithelial remnants. They account for 3% to 11% of all jaw cysts. They are unique among odontogenic cysts because of their aggressive nature and high potential for recurrence. There is a strong association with basal cell nevus syndrome. A moderate-quality coronal CT scan shows lesions that appear to be nonspecific, although they are associated with ectopic teeth. □J.D.S.

### Interventional Neuroradiology

Alexander TD, Macdonald RL, Weir B, Kowalczyk A. **Intraoperative angiography in cerebral aneurysm surgery: a prospective study of 100 craniotomies.** *Neurosurgery* 1996;39:10-18

Among patients undergoing intraoperative angiography, 12% had demonstration of unexpected major arterial occlusion (n = 6) and/or persistent filling of a portion of the aneurysm (n = 10). Factors predicting such arterial occlusion were giant aneurysm or basilar tip aneurysm location. Giant aneurysm and posterior communicating artery location predicted the detection of residual aneurysm. Complications relating to intraoperative angiography occurred in 2%. Intraoperative angiography has subsequently been discontinued by the authors except for procedures associated with giant aneurysm, or for aneurysms located at the posterior communicating artery or basilar tip. Discussion by the reviewers is of additional interest. □J.A.B.

Nakatsuka H, Ueda T, Ohta S, Sakaki S. **Successful percutaneous transluminal angioplasty for basilar artery stenosis: technical case report.** *Neurosurgery* 1996;39:161-164

In two patients with symptomatic 90% basilar artery stenosis, persistent clinical and hemodynamic improvement followed use of submaximal transluminal angioplasty. The technique of using a low-pressure 2-mm-diameter balloon that allowed a residual persisting 50% to 60% stenosis is discussed. There were no complications. □J.A.B.

Infeld B, Davis SM, Donnan GA, et al. **Streptokinase increases luxury perfusion after stroke.** *Stroke* 1996;27:1524-1529

Some earlier reports have indicated that streptokinase is associated with increased mortality, which has led to early termination of some trials. The authors studied 24 patients in the Australian streptokinase trial with acute middle cerebral infarct using single-photon emission CT. They looked at both early and late perfusion changes. They found that streptokinase did not increase early reperfusion after stroke. Streptokinase was associated with increased nonnutritional reperfusion (luxury perfusion), which correlated with poor outcome. The authors postulate that the increased risk of hemorrhagic transformation in cerebral edema associated with intravenous thrombolysis may reflect reperfusion injury. Two single-photon emission CT figures. □J.S.R.

Wikholm G, Lundqvist C, Svendsen P. **Embolization of cerebral arteriovenous malformations, I: technique, morphology, and complications.** *Neurosurgery* 1996;39:448-459

Lundqvist C, Wikholm G, Svendsen. **Embolization of cerebral arteriovenous malformations, II: aspects of complications and late outcome.** *Neurosurgery* 1996;39:460-469

In this two-part article the authors review embolization of 150 patients with cerebral arteriovenous malformations (AVMs). Part I is a discussion of angiographic findings, embolization technique, complications, and subsequent suitability for surgical management or stereotactic radiation. Part II focuses more closely on complications and presents data relating to late clinical outcome. Among the 150 patients, AVMs were eliminated by embolization alone (n = 20) or by embolization with supplemental surgery (n = 14). AVMs were reduced to a size satisfactory for radiation therapy in 66 patients. Factors predisposing to less favorable outcomes among 50 patients who had incomplete AVM embolization are discussed. □J.A.B.

### Stroke

Bassetti C, Carruzzo A, Sturzenegger M, Tuncdogan E. **Recurrence of cervical artery dissection: a prospective study of 81 patients.** *Stroke* 1996;27:1804-1807

A series of 81 patients with carotid or vertebral artery dissection confirmed by angiography. Three of 74 of the surviving patients had recurrent carotid dissection while under prophylaxis with aspirin or anticoagulation. They conclude that recurrence of dissection occurs only rarely, at a rate of 4% over their 34 month follow-up. In their series recurrent dissection was a benign condition presenting with head and facial pain, Horner syndrome, and transient ischemic attack but no permanent neurologic deficits. Four figures. □J.S.R.

Schwartz TH, Solomon RA. **Perimesencephalic nonaneurysmal subarachnoid hemorrhage: review of the literature.** *Neurosurgery* 1996;39:433-440

Perimesencephalic nonaneurysmal subarachnoid hemorrhage represents 8% to 11% of subarachnoid hemorrhage not associated with trauma or AVMs. Presentation, clinical course, pathogenesis, diagnosis, and treatment are discussed based on the authors' review of the literature. A strategy for avoiding unnecessary repeat angiography after a normal initial study is presented. □J.A.B.

Hasegawa Y, Formato JE, Latour LL, et al. **Severe transient hypoglycemia causes reversible change in the apparent diffusion coefficient of water.** *Stroke* 1996;27:1648-1656

The authors used 15 minutes and 50 minutes of hypoglycemic insult in rats to show that the apparent diffusion coefficient of water transiently declines during hypoglycemia. This likely reflects reduction in the extracellular space caused by water moving into the cells across cell membranes. The authors document reversibility even after the longer, more severe insult of 50 minutes. Five figures. □J.S.R.

Aronowski J, Strong R, Grotta JC. **Combined neuroprotection and reperfusion therapy for stroke.** *Stroke* 1996;27:1571-1577

The first of many such trials we are likely to see in the future looking at a combined therapy for stroke, at neuroprotective agents, and at reperfusion agents together. Authors found in a rat model of reversible middle cerebral artery and common carotid artery occlusions that combined therapy is more effective than the administration of two agents separately, reducing infarct volume for vascular occlusion to a greater extent. □J.S.R.

Gerraty RP, Bowser DN, Infeld B, Mitchell PJ, Davis SM. **Microemboli during carotid angiography.** *Stroke* 1996;27:1543-1547

Microemboli on transcranial Doppler ultrasound in 24 patients during angiography for carotid territory ischemia are correlated with angiographic and clinical characteristics. Authors conclude that cerebral microemboli are detected routinely during catheter angiography and are chiefly gaseous and clinically silent and are not associated with cerebral tissue changes on T2-weighted MR. □J.S.R.

Alexandrov AV, Black SE, Ehrlich LE, et al. **Simple visual analysis of brain perfusion on HMPAO SPECT predicts early outcome in acute stroke.** *Stroke* 1996;27:1537-1542

The authors evaluated 412 patients with hemispheric stroke out of 500 consecutive patients with stroke. They used a simple visual single-photon emission CT pattern of brain perfusion, reflected in normal, high, mixed, low, and absent grades. These were correlated with severity of stroke, lesion volume, and short-term outcome. They found that this visual pattern correlated with the extent and severity and short-term outcome of hemispheric stroke. The single-photon emission CT findings were time dependent and have the highest prognostic value within the first 48 hours after stroke, with no advantage over clinical examination beyond 72 hours. □J.S.R.

Touho H, Karasawa J. **Evaluation of time-dependent thresholds of cerebral blood flow and transit time during the acute stage of cerebral embolism: a retrospective study.** *Surg Neurol* 1996;46:135-146

Thirty-six patients were evaluated within 6 hours of the onset of cerebral ischemia. The authors found a significant negative correlation between mean transit time and cerebral blood flow. They conclude that there are thresholds for conversion of reversible to irreversible ischemia, which could be rapidly determined with CT-based technologies. Thirteen figures. □J.S.R.

Kaim A, Proske M, Kirsch E, et al. **Value of repeat-angiography in cases of unexplained subarachnoid hemorrhage.** *Acta Neurol Scand* 1996;93:366-373

The authors carried out repeat angiography a mean of 15 days after the initial bleed in patients with spontaneous subarachnoid hemorrhage. All the patients had normal angiograms after initial four-vessel or three-vessel angiography with adequate visibility of the opposite posterior inferior cerebellar artery. The authors detected aneurysms in 8 of 42 patients (19%), a higher percentage than is usually found. The authors believe that the only situation not requiring repeat angiography is the perimesencephalic hemorrhage centered anterior to the midbrain. □S.M.W.

## Cerebral Blood Flow

Astrup J, Bergholt B, von Oettingen G. **Third International Conference on Xenon/CT CBF: June 1995.** *Acta Neurologica Scand* 1996;93:suppl 166

This supplement is required reading for all investigators interested in and carrying out cerebral blood flow studies in patients with various neurologic diseases affecting the cerebral circulation. □S.M.W.