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### **Annotated bibliography.**

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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### Temporal Bone

Ferlito A, Devaney KO, Rinaldo A, et al. **Ear cholesteatoma versus cholesterol granuloma.** *Ann Otol Rhinol Laryngol* 1997;106:79–85

This is an excellent histopathology-based review (no images) that defines and differentiates these two entities. Very interesting information. Authors reiterate that *cholesteatoma* is a misnomer: it is not a neoplasm (-oma), there are no cholesterol crystals (chole-), and it does not contain fat (-stea-). □J.D.S.

Murofushi T, Ouvrier RA, Parker GD, Graham RI, Da Silva M, Halmagyi GM. **Vestibular abnormalities in CHARGE association.** *Ann Otol Rhinol Laryngol* 1997;106:129–134

A report of five patients with the CHARGE (coloboma, heart disease, atresia of choanae, retarded growth and development and/or central nervous system anomalies, genital hypoplasia, and ear anomalies) association. Each had absent vestibular function and aplastic semicircular canals bilaterally. Cochlear function was reduced in 6 of 10 ears. The bony cochlea was present but perhaps somewhat hypoplastic in 7 of 10. Confirmatory CT scans are included. □J.D.S.

### Stroke

Loubinoux I, Volk A, Borredon J, Guirimand S, Tiffon B, Seylaz J, Méric P. **Spreading of vasogenic edema and cytotoxic edema assessed by quantitative diffusion and T2 magnetic resonance imaging.** *Stroke* 1997;28:419–427

Diffusion imaging and T2-weighted imaging in acute rat infarct model (middle cerebral artery occlusion) were evaluated. Twenty-four percent of the regions of interest with T2 abnormalities seen at 24 hours were from brain edema. Authors assume that diffusion-weighted signal is from cytotoxic changes, while T2-weighted MR images show both cytotoxic and vasogenic edema components. The ability to measure brain edema noninvasively would be a significant step forward, and would allow evaluation of drugs designed to reduce secondary damage. □J.S.R.

Marcinczyk MJ, Nicholas GG, Reed JF III, Nastasee SA. **Asymptomatic carotid endarterectomy: patient and surgeon selection.** *Stroke* 1997;28:291–296

Two hundred seventy-seven asymptomatic patients undergoing carotid endarterectomy between 1987 and 1993 were reviewed for mortality, myocardial infarction, and stroke. Deviations from the Asymptomatic Carotid Atherosclerosis Study eligibility criteria resulted in higher morbidity and mortality. Perioperative stroke and mortality rates for asymptomatic carotid artery surgery should be less than 3%. □J.S.R.

Isaka Y, Nagano K, Narita M, Ashida K, Imaizumi M. **High signal intensity on T2-weighted magnetic resonance imaging and cerebral hemodynamic reserve in carotid occlusive disease.** *Stroke* 1997;28:354–357

Patients with unilateral carotid occlusion who showed high signal on T2-weighted images within the corona radiata, ipsilateral to the occlusion, were evaluated with HMPAO single-photon emission CT (SPECT). The location and degree of the high signal intensity on T2-weighted images reflects the hemodynamic status in patients with unilateral occlusion. Also, a hemodynamically compromised subgroup of people who could have transient ischemic attacks from minor strokes because of a marginal basal level of perfusion to that hemisphere was identified. □J.S.R.

### Brain Tumors and Cysts

Tonn JC, Paulus W, Warmuth-Metz M, Schachenmayr W, Sörensen N, Roosen K. **Pleomorphic xanthoastrocytoma: report of six cases with special consideration of diagnostic and therapeutic pitfalls.** *Surg Neurol* 1997;47:162–169

In six cases of pleomorphic xanthoastrocytoma, common features are: patients usually less than 30 years of age, tumor located in the temporal and parietal regions, cystic appearance in superficial location, and seizures as the typical initial symptom. Three figures, including histology. □J.S.R.

Schroeder HWS, Gaab MR. **Endoscopic observation of a slit-valve mechanism in a suprasellar prepontine arachnoid cyst: case report.** *Neurosurgery* 1997;40:198–200

Two in vivo color photographs of the valve mechanism within a prepontine arachnoid cyst are worth a review. The description of flow dynamics is of additional interest. □J.A.B.

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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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## Interventional Neuroradiology

Debrun GM, Aletich V, Ausman JI, Charbel F, Dujovny M. **Embolization of the nidus of brain arteriovenous malformations with n-butyl cyanoacrylate.** *Neurosurgery* 1997;40:112-121

Embolization of the nidus with single-column flow-controlled *N*-butyl cyanoacrylate of brain arteriovenous malformations in 54 patients is reported and the technique described. Intravascular treatment was most commonly combined with surgical resection or radiosurgery. Two patients died and an additional two had complications. Six patients retained catheter fragments. □J.A.B.

Bao Y-H, Ling F. **Classification and therapeutic modalities of spinal vascular malformations in 80 patients.** *Neurosurgery* 1997;40:75-81

The angiography and treatment of 80 cases of spinal cord vascular malformations is discussed. A classification is proposed. Potential surgical versus interventional treatment decisions are related to lesion angioarchitecture and anatomic location. □J.A.B.

## Pediatric Neuroradiology and Congenital Malformations

Suzuki Y, Negoro M, Shibuya M, Yoshida J, Negoro T, Watanabe K. **Surgical treatment for pediatric moyamoya disease: use of the superficial temporal artery for both areas supplied by the anterior and middle cerebral arteries.** *Neurosurgery* 1997;40:324-330

In each of 36 children with moyamoya disease, superficial temporal artery to cortical middle cerebral artery branch anastomosis or encephaloduroarteriosynangiosis was combined with encephalomyosynangiosis. Bilateral frontal burr holes were also placed in all patients to induce vascularization in anterior cerebral artery territories. There was a 3-month interval between laterality of the procedures performed. Improvement in clinical, MR, and angiographic findings after these multiple procedures is discussed. □J.A.B.

Petersen B, Handwerker M, Huppertz H-I. **Neuroradiological findings in classical late infantile neuronal ceroid-lipofuscinosis.** *Pediatr Neurol* 1996;15:344-347

A 5-year-old girl had late-infantile neuronal ceroid-lipofuscinosis. Good CT and MR images show marked cerebral and cerebellar atrophy on CT and increased T2 signal in the periventricular white matter on MR. The basal ganglia appear normal. □R.S.B.

Nagib MG, O'Fallon MT. **Posterior fossa lateral ependymoma in childhood.** *Pediatr Neurosurg* 1996;24:299-305

Of 16 children with posterior fossa ependymoma, four had tumors classified as lateral ependymomas because of their configuration and suspected site of origin in the posterior fossa. These patients ranged in age from 2 months to 5 years. All the children underwent gross total surgical resection with adjunctive chemotherapy and/or radiation therapy. All children had tumor recurrences 1 to 4 years after surgery, suggesting a worse prognosis for the subgroup of children with lateral posterior fossa ependymomas than for those with the typical midline tumors. The tumors are shown with CT and MR images. □R.S.B.

Chintagumpala MM, Armstrong D, Miki S, et al. **Mixed neuronal-glioma (gangliogliomas) in children.** *Pediatr Neurosurg* 1996;23:306-313

Report of 10 year experience (1984-1993) with mixed neuronal-glioma tumors. Twenty-eight children had gangliogliomas (4 anaplastic) and four children had dysembryoplastic neuroepithelial tumors. Regardless of histology, gross total resection was usually curative. Nearly half of the children had local subarachnoid involvement, only 1 of which became recurrent disseminated disease. The most common presenting symptom was seizures. Two of the tumors are shown on excellent CT and MR images. □R.S.B.

Gordon N. **Epilepsy and disorders of neuronal migration, II: epilepsy as a symptom of neuronal migration defects.** *Dev Med Child Neurol* 1996;38:1131-1134

The relationship between disorders of neuronal migration and the occurrence of epilepsy is discussed. Genetic and prenatal insults associated with neuronal migration anomalies are briefly reviewed and related to mechanisms of normal and abnormal migration. □J.A.B.

Yglesias A, Narbona J, Vanaclocha V, Artieda J. **Case report: Chiari type 1 malformation, glossopharyngeal neuralgia and central sleep apnoea in a child.** *Dev Med Child Neurol* 1996;38:1126-1130

Clinical symptoms associated with Chiari I malformation are succinctly reviewed in this report of glossopharyngeal neuralgia and central sleep apnea occurring in a child with caudal cerebellar tonsillar displacement. □J.A.B.

Swayze VW II, Johnson VP, Hanson JW, et al. **Magnetic resonance imaging of brain anomalies in fetal alcohol syndrome.** *Pediatrics* 1997;99:232-240

Ten patients (four children, three adolescents, and three adults) with fetal alcohol syndrome were evaluated with brain MR. Midline abnormalities were observed in six patients, ranging from partial to complete agenesis of the corpus callosum (three patients) to hypoplastic corpus callosum (one patient). Three patients had large cavum septi pellucidi and cavum vergae. The midline abnormalities were found in the patients with more severe facial anomalies. Other brain abnormalities included micrencephaly, ventriculomegaly, and hypoplasia of the inferior olivary eminences. Several good-quality MR images. □R.S.B.

Zupan V, Gonzalez P, Lacaze-Masmonteil T, et al. **Periventricular leukomalacia: risk factors revisited.** *Dev Med Child Neurol* 1996;38:1061-1067

Among 802 infants born between 24 and 32 weeks of gestational age, periventricular leukomalacia (PVL) was shown by sonography in 9.2%. Univariate analysis was used to characterize the significance of possible risk factors associated with PVL. The strongest correlation was with a history of intrauterine infection and/or premature rupture of membranes. These and other findings reported in this study support the hypotheses that PVL predominantly originates before birth and that susceptibility to PVL depends on developmental age. The potential relationship of PVL to cytokine levels is discussed. □J.A.B.

Zimmerman RA. **Neuroimaging of primary brainstem gliomas: diagnosis and course.** *Pediatr Neurosurg* 1996;25:45-53

The symposium "Brain Stem Tumors of Childhood: Have We Made Progress?" was held in New York, NY, in December 1995. Several other papers from this symposium were included in earlier issues of *Pediatric Neurosurgery* and have been annotated for the *AJNR*. This paper represents the neuroradiologists' contribution to this symposium, prepared by an eminent pediatric neuroradiologist. CT and MR examples of diffuse pontine gliomas (poor prognosis), exophytic medullary gliomas (better prognosis), and midbrain gliomas (indolent course) are shown. Application of proton spectroscopy to a case of malignant pontine glioma is also illustrated. □R.S.B.

Thompson DNP, Slaney SF, Hall CM, Shaw D, Jones BM, Hayward RD. **Congenital cervical spinal fusion: a study in Apert syndrome.** *Pediatr Neurosurg* 1996;25:20-27

A review of 59 cases of Apert syndrome (acrocephalosyndactyly type 1). Radiologic evidence of progressive or complete vertebral fusion is seen in 63% of the patients. Of those patients, approximately one half had single-level vertebral fusion; the others were fused at multiple levels, either contiguous or skipping levels. The most commonly involved levels were C3-4 and C5-6. Predictors of subsequent bone fusion were small size of the vertebral body and reduced size of the intervertebral disk space. Several examples of progressive fusion are illustrated with good radiographs. □R.S.B.

Bosman C, Boldrini R, Dimitri L, Di Rocco C, Corsi A. **Hemimegalencephaly: histological, immunohistochemical, ultrastructural and cytofluorimetric study of six patients.** *Childs Nerv Syst* 1996;12:765-775

An excellent article on hemimegalencephaly. Though no neuroimaging is illustrated, the pathologic investigation of six patients with hemimegalencephaly includes histologic, immunohistochemical, ultrastructural, and cytofluorimetric studies. I suspect this will be a frequently referenced article in subsequent literature regarding this fascinating brain malformation. □R.S.B.

Frigieri G, Guidi B, Costa Zaccarelli S, et al. **Multicystic encephalomalacia in term infants.** *Childs Nerv Syst* 1996;12:759-764

Eight full-term infants had ultrasound-diagnosed multicystic encephalomalacia or subcortical leukomalacia. These lesions were due to severe asphyxia and/or hypotension in the perinatal period. On ultrasound, the onset of increased echogenicity was observed between the second and fifth day after injury. Multicystic evolution was observed between the seventh and 30th day after injury. Basal ganglia abnormalities were also present in some of the children. Unfortunately, no correlative CT or MR images are available. □R.S.B.

Di Rocco C, Velardi F. **Consensus Conference on Craniosynostoses, Rome, 4-6 May 1995.** *Childs Nerv Syst* 1996;12:637-639

The Consensus Conference on Craniosynostoses was held in Rome, Italy, in May 1995 and was attended by neurosurgeons and craniofacial surgeons from several countries. This entire issue of *Child's Nervous System* is made up of reports from this conference. The issue is useful as a reference for neuroradiologists involved in imaging of children with the various manifestations of craniosynostosis. Imaging modalities included are: plain film x-rays, cephalometrics, 3-D CT, and MR. Several before-and-after patient photographs are useful in documenting the clinical appearance of many of the different forms of craniosynostosis and some of the associated syndromes. □R.S.B.

Willis BK, Smith JL, Falkner LD, Vernon DD, Walker ML. **Fatal air bag mediated craniocervical trauma in a child.** *Pediatr Neurosurg* 1996;24:323-327

A 5-year-old child sustained a fatal airbag craniocervical injury while sitting in the front passenger seat during a low-speed crash. A lateral cervical spine film demonstrates the child's fatal injury, disruption of the cervical spinal column at the C2-3 level. An interesting discussion of how airbags are a hazard to children is included. □R.S.B.

Lappalainen R, Liewendahl K, Sainio K, Hikkinen P, Rikonen RS. **Brain perfusion SPECT and EEG findings in Rett syndrome.** *Acta Neurologica Scand* 1997;95:44-50

Rett syndrome is a peculiar neurodevelopmental disease in girls characterized by loss of purposeful use of the hands and stereotypical hand movements. Epilepsy is quite common in these patients. Neuroradiologic findings (CT and MR) are usually normal. Thirteen patients with Rett syndrome underwent SPECT imaging. Hypoperfusion of varying severity was found in 11 patients, with a bilateral frontal preponderance in six. Electroencephalographic findings were abnormal in 11 patients. This paper is of interest to neuroradiologists investigating children with seizures. Good, convincing SPECT images. □S.M.W.

Pollack IF, Losken HW, Fasick P. **Diagnosis and management of posterior plagiocephaly.** *Pediatrics* 1997;99:180-185

A report of 4 years of experience treating the controversial entity of posterior plagiocephaly. Of 71 infants, only two had true lambdoid synostosis, both cases associated with synostosis of the posterior sagittal suture. Both cases required surgery. The remaining 69 infants were treated conservatively. Approximately half of them responded to positional therapy alone, the others required an orthoplastic helmet. Predisposing factors for posterior plagiocephaly included strong positioning preference during early infancy (67 infants), torticollis (10 infants), prematurity (6 infants), and developmental delay (2 infants). □R.S.B.

Pople IK, Sanford RA, Muhlbauer MS. **Clinical presentation and management of 100 infants with occipital plagiocephaly.** *Pediatr Neurosurg* 1996;25:1-6

A report of 100 consecutive infants who presented with occipital plagiocephaly over a period of 15 years. Eighteen infants showed obvious progression of their deformity or radiologic signs of fusion of the lambdoid suture and went on to surgical resection of one or both lambdoid sutures. Of these 18 surgical cases, nine were found to have true lambdoid synostosis during surgery. The remaining 82 children were treated nonsurgically, 90% either showing improvement or satisfactory stabilization of their deformity. Marked internal ridging of the lambdoid suture on a cross-sectional CT scan corresponded most closely with the surgical finding of true lambdoid synostosis. This is an important paper on a controversial subject. □R.S.B.

Duhaime A-C, Christian C, Moss E, Seidl T. **Long-term outcome in infants with the shaking-impact syndrome.** *Pediatr Neurosurg* 1996;24:292-298

Fourteen of 62 survivors of non-accidental head trauma between 1978 and 1988 were studied an average of 9 years after the injury. Half of the children were severely disabled or vegetative, two were moderately disabled, and five had a good outcome, although most either repeated grades or required tutoring. Factors at initial presentation that were associated with poor outcome included unre-

sponsiveness on admission, need for intubation, age less than 6 months, and bilateral or unilateral diffuse low attenuation on CT scans. All children with bilateral diffuse low attenuation and loss of gray-white differentiation on early CT scans remained blind, retarded, nonverbal, and nonambulatory despite aggressive medical and surgical treatment. Three examples of early and late CT scans of affected children are shown. □R.S.B.

Haseler LJ, Phil M, Arcinue E, Danielsen ER, Bluml S, Ross BD. **Evidence from proton magnetic resonance spectroscopy for a metabolic cascade of neuronal damage in shaken baby syndrome.** *Pediatrics* 1997;99:4-14

A report of the use of proton MR spectroscopy in the sequential evaluation of three infants with shaken baby syndrome. MR spectra analyzed 5 to 7 days after injury showed a normal pattern in the one infant who had a good outcome. The two infants who had poor outcomes had markedly decreased levels of *N*-acetyl-aspartate, creatine, and phosphocreatine, and a great excess of lactate/lipid and lipid. The authors conclude, on the basis of this small study group, that MR spectroscopy can provide important insights into shaken baby syndrome and, by providing prognostic information, has the potential to modify current patient care. Because the added cost of MR spectroscopy (when available) is low compared with CT or MR, it should be considered for patients with shaken baby syndrome. □R.S.B..