# DEMYELINATING AND INFLAMMATORY CNS DISORDERS

## MRI CHANGES COMPARED IN CHILD AND ADULT ONSET MS

Initial brain MRI characteristics of 41 children (<18 years) and 35 adults (>18 years) at multiple sclerosis (MS) onset were analyzed retrospectively in a study at UCSF Regional Pediatric and Adult MS Centers, and University of California, San Francisco. Children had a higher number of total T2- and large T2-bright areas than adults. Children more frequently had T2-bright foci in the posterior fossa and enhancing lesions than adults. Age was the main independent predictor for infratentorial involvement. (Waubant E, Chabas D, Okuda DT, et al. Difference in disease burden and activity in pediatric patients on brain magnetic resonance imaging at time of multiple sclerosis onset vs adults. **Arch Neurol** Aug 2009;66:967-971). (Respond: E Waubant MD PhD, UCSF Regional Pediatric MS Center, 350 Parnassus Ave, Ste 908, San Francisco, CA 94117. E-mail:emmanuelle.waubant@ucsf.edu).

COMMENT. Higher disease burden, posterior fossa involvement, and rate of new lesions in pediatric-onset MS are characteristics associated with worse disability progression in adults.

## ACUTE CEREBELLITIS AND HYDROCEPHALUS

Two children, a girl aged 5 years and a boy aged 11 years, with acute cerebellitis, tonsillar herniation and hydrocephalus are reported from Schneider Children's Medical Center of Israel, Petah Tikva, Tel Aviv. The 5-year old presented with vomiting, occipital pain, and right torticollis of 1 week's duration. Two weeks previously, she had cough and rhinorrhea. Neurological examination revealed hyperactive reflexes, truncal ataxia, and dysmetria. MRI showed diffuse edema (hyperintensity on T2-weighted images) of the right cerebellar hemisphere and vermis, compression of 4$^{th}$ ventricle and brainstem, tonsillar herniation, compatible with cerebellitis. Serology for *Mycoplasma pneumoniae* was immunoglobulin M-positive and G-negative. Following treatment with dexamethasone, diuretics and vibramycin, signs resolved after 1 week. Follow-up MRI after 7 weeks showed regression of cerebellar edema, correction of cerebellar tonsils, and normal ventricles. The 11-year-old boy recovered after ventriculostomy; the cause for his cerebellitis was unknown. (Shkalim V, Amir J, Kornreich L, Scheuerman O, Straussberg R. Acute cerebellitis presenting as tonsillar herniation and hydrocephalus. **Pediatr Neurol** Sept 2009;41:200-203). (Respond: Dr Shkalim, Department of Pediatrics C, Schneider Children's Medical Center of Israel, 14 Kaplan St, Petah Tikva 49202, Israel. E-mail: shine6@walla.co.il).

COMMENT. Fulminant cerebellitis, a fatal, clinically isolated syndrome, is reported in a 9-year-old boy treated at Jawaharlal Nehru Medical College, Belgaum, India. (Kamate M, Chetal V, Hattiholi V. **Pediatr Neurol** Sept 2009;41:220-222). He presented with severe occipital headache, vomiting, and ataxic gait, associated with intermittent fever. Neurological examination showed a conscious, oriented, irritable child with papilledema, bilateral lateral rectus palsy, brisk reflexes, neck retraction and ataxia. CT head scan revealed hydrocephalus

secondary to 4th ventricle obstruction. MRI after ventricular shunt showed bilateral cerebellar swelling and brainstem compression secondary to cerebellitis. PCR studies for herpes simplex virus and varicella were negative. Despite methylprednisolone and shunt, the patient died on day 2 of admission. Posterior fossa decompression was refused.

Cerebellitis, an inflammatory process, is caused by primary infectious, postinfectious, or postvaccination disorder. The authors cite varicella zoster, Epstein-Barr virus, measles, pertussis, diphtheria, Coxsackie, mumps, herpes simplex virus 1, and parvovirus as most frequently involved infectious agents.

## EMERGING CNS VIRAL INFECTIONS

In a 2-part review, a neuroinfectious disease specialist at the University of Colorado Denver Health Sciences Center and Veterans Medical Center describes emerging viral infections as diseases that infect new hosts, spread into new geographic areas, alter their pathogenesis, or are caused by agents not recognized as pathogenic. Of 1415 species of infectious organisms known to be pathogenic in humans, 175 are considered to be emerging, with viruses and prions accounting for 77 (44%) of the total, and 80% having a primary nonhuman animal source (zoonotic). Animals, particularly wild animals, are significant risk factors for emerging infectious diseases (EIDs), and 40% of viral zoonotic EIDs are vectorborne. Exposure to mosquitoes and common arthropod vectors is another major factor in disease emergence. Host factors also play a key role in EIDs, an increased susceptibility resulting from AIDS, immunosuppression with cancer chemotherapy, organ transplant-associated, and drugs used to treat autoimmune and immune-mediated disorders. Viral EIDs cause severe neurological symptoms such as encephalitis in 39% of cases, and occasionally in an additional 10%. The review of various viruses includes 76 references. (Tyler KL. Emerging viral infections of the central nervous system. **Arch Neurol** Aug 2009;66:939-948). (Respond: Kenneth L Tyler MD, Neurology B-182, Research Complex-2, University of Colorado Denver Health Sciences Center, 12700 E 19th Ave, Aurora, CO 80045. E-mail: ken.tyler@ucdenver.edu).

COMMENT. Millichap JJ and Epstein LG in their recent publication, neuroinfectious disease as an emerging subspecialty in neurology (**Neurology** July 28 2009;73:e14-e15), discuss career prospects for neurologists interested in the field. Accredited fellowships are in the developing stage, but non-accredited training is available at several institutions. Close identification with a mentor in neuro-ID and collaboration with medicine or pediatrics-based ID specialists are essential requirements. Important roles for pediatric neurology ID subspecialists include consultant to an ID service for acute CNS infections, and diagnosis and management of chronic neuroinfectious disorders, including postinfectious epilepsy. Development of new antimicrobial and anti-inflammatory agents is an area of future research, especially in the management of emerging viral infections. Dedicated textbooks and reviews on neuro-ID cited by Millichap and Epstein include:

Barton LL, Friedman NR, eds. *The Neurological Manifestations of Pediatric Infectious Diseases and Immunodeficiency Syndromes.* Totwa, NJ: Humana Press, 2008.

Roos KL, ed. *Principles of Neurologic Infectious Diseases: Principles and Practice.* New York: McGraw-Hill, 2004.

Neuroinfections: celebrating the past, discussing the present. *Lancet Neurol* 2008;7:975.