encephalitis in the winter of 1996-97 in Nagoya, Japan, was mainly due to type A. Direct viral involvement of the central nervous system was confirmed by positive PCR results in the cerebrospinal fluid. The clinical profiles of this outbreak were different from most previous epidemics.

Viral encephalitis, especially influenza, during pregnancy and early childhood is a potential and possibly overlooked factor in the cause of the ADHD syndrome (Millichap JG. Encephalitis virus and ADHD. IRSM Letter to the editor, Dec 1997;90:709-710).

ATTENTION DEFICIT AND LEARNING DISORDERS

ADHD AND PSYCHOACTIVE SUBSTANCE USE DISORDERS

The association between attention deficit/hyperactivity disorder (ADHD) and psychoactive substance use disorders (PSUD) was studied by familial risk analysis at the Massachusetts General Hospital, Boston, MA. Blind rating of first-degree relatives of children and adolescents referred with ADHD (131 probands, 413 relatives) and healthy controls (106 probands, 323 relatives) showed that the risk for ADHD among relatives of probands with ADHD did not differ by the presence of PSUD in the proband, and ADHD is likely to be causally independent from PSUD. ADHD and drug use disorders may share familial etiological factors. (Milberger S, Faraone SV, Biederman J, Chu MP, Wilens T. Familial risk analysis of the association between attention-deficit/hyperactivity disorder and psychoactive substance use disorders. Arch Pediatr Adolesc Med Oct 1998;152:945-951). (Reprints: Joseph Biederman MD, Pediatric Psychopharmacology Unit, ACC-725, Massachusetts General Hospital, 15 Parkman St, Boston, MA 02114).

COMMENT. Familial risk analyses suggest that ADHD is causally independent from substance use disorders. Patients would need to be followed through the age at risk for PSUD to rule out a common familial risk factor for ADHD and PSUD.

Variations in ADHD treatment patterns were studied in 102 special education students sampled at the University of Florida, Gainesville. Nearly three fourths were treated by a primary care provider, and less than one third of these were seen by a mental health specialist. ADHD children receiving only primary care had fewer comorbid conditions, less impairment, less family burden, and less use of multimodal therapies than those seen by a mental health specialist. (Bussing R, Zima BT, Belin TR. Variations in ADHD treatment among special education students. J Am Acad Child Adolesc Psychiatry Sept 1998;37:968-976). Reports of clinical outcomes and comorbidity of ADHD vary with the specialty and type of care provider.

PERSISTENCE OF DEVELOPMENTAL DYSCALCULIA

The natural history of developmental dyscalculia (DC) in 140 fourth-grade students was studied at the Shaare Zedek Medical Center, Jerusalem, Israel. In phase I of the study, IQ testing; arithmetic, reading, and writing evaluations; and ADHD assessments were conducted over a 3-year period. In phase II, three years later, 123 (88%) were retested and 57 (47%) had persistent DC, with scores in the lowest 5% for their age group (13-14 years). Persistence of DC was correlated with severity of DC and arithmetic problems in siblings of the probands. Socioeconomic status, gender, another learning disability, and educational interventions were not associated with persistence of DC. Attention problems were more severe in children with persistent DC than in those whose scores improved at follow-up.

(Shalev RS, Manor O, Auerbach J, Gross-Tsur V. Persistence of developmental dyscalculia: what counts? J Pediatr Sept 1998;133:358-362). (Reprints: Ruth S Shalev MD, Neuropediatric Unit, Shaare Zedek Medical Center, POB 3235, Jerusalem, Israel 91031).

COMMENT. Approximately one half of children diagnosed with developmental dyscalculia in fifth grade are likely to have persistent DC in eighth grade. Division and complex subtraction were especially impaired while addition was generally mastered. Arithmetic problems in siblings were associated with persistent DC in the proband. Educational intervention, provided in 47% of children with persistent DC compared to only 17% of those with nonpersistent DC, is apparently not the only answer. The occurrence of associated neurological conditions and components of the Gerstmann syndrome, including dysgraphia, finger agnosia, and R-L disorientation, would have been of interest, and might explain persistence of DC in some cases. Visual-perceptual and spatial disturbance. problems with symbols, language and reading disorders, impaired concepts of direction and time, and memory deficits may be implicated in arithmetic difficulties. A variety of teaching strategies are required in mathematics (Lerner J. Learning Disabilities. 4th ed, Boston, Houghton Mifflin, 1985). Developmental dyscalculia is a chronic disorder that is not *outgrown*, but demands the same interest of neurologists and educators as dyslexia.

FRONTAL LOBE INFARCTION AND COGNITIVE DEFICITS

Cognitive deficits associated with frontal-lobe infarction in children with sickle cell disease (SCD) were examined at the Institute of Child Health, London, UK. Of 41 with SCD who had MRIs, 5 with stroke symptoms had large frontal lobe (FL) infarcts, and 4 without symptoms had smaller FL infarcts. Those with stroke had significant impairments of IQ, memory, and FL function, on the Wisconsin Card Sorting Test (WCST), and those with covert infarction had lesser degrees of cognitive impairment. (Watkins KE, Hewes DKM, Connelly A et al. Cognitive deficits associated with frontal-lobe infarction in children with sickle cell disease. Dev Med Child Neurol 1998;40:536-543). (Respond: KE Watkins MSc, Cognitive Neuroscience Unit, Institute of Child Health, The Wolfson Centre, Mecklenburgh Square, London WC1N 2AP, UK).

COMMENT. Covert infarcts in the frontal lobes may be defined by MRI in 10% of children with sickle cell anemia. The neurologic examination may be normal but cognitive tests may uncover deficits in IQ, memory, and frontal lobe function.

PARATONIA AND FRONTAL LOBE COGNITIVE FUNCTION

Paratonia, an alteration of tone to passive movement, was assessed in 25 adult patients with degenerative dementia and correlated with other tests of frontal lobe function (echopraxia, distractibility, word fluency) and cognitive function (Mini-Mental State Examination) in a study at Ohio State University Medical Center, Columbus, OH. A modified Kral procedure which measures continued movement after cessation of passive movement (facilitory paratonia) correlated better with a subjective rating of facilitory paratonia than with oppositional paratonia (gegenhalten). The Kral procedure also predicted echopraxia. Both forms of paratonia and the Kral procedure each predicted scores on the MMSE for frontal lobe cognitive function. (Beversdorf DQ, Heilman KM. Facilitory paratonia and frontal lobe functioning. Neurology Oct 1998;51:968-971). (Reprints: Dr David Q Beversdorf, Department of Neurology, Ohio State University Medical Center, 1654 Upham Dr, Columbus, OH 43210).