

brain volume abnormalities and long-term cognitive outcome in preterm infants. JAMA October 18, 2000;284:1939-1947). (Reprints: Bradley S Peterson MD, Yale Child Study Center, 230 S Frontage Rd, New Haven, CT 06520).

COMMENT. Regional cortical volumes measured at 8 years of age in preterm children are significantly smaller than in term controls, and abnormalities, especially in the volumes of sensorimotor and midtemporal cortices, are related to cognitive impairments.

## NEUROIMAGING AND NEURAL BASES OF LEARNING AND MEMORY

The use of positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) studies in identifying brain regions involved with learning and memory is reviewed from the University of Alberta, Canada, and the Umea University, Sweden. Prefrontal and parietal regions are involved with working memory; the left prefrontal and temporal regions with semantic memory; the left prefrontal and medial temporal regions with episodic memory encoding; right prefrontal, posterior midline and medial temporal regions with episodic memory retrieval; and the motor, parietal, and cerebellar regions with skill learning. (Cabeza R, Nyberg L. Neural bases of learning and memory: functional neuroimaging evidence. Current Opinion in Neurology August 2000;13:415-421). (Respond: Roberto Cabeza, Department of Psychology, University of Alberta, P220 Biological Sciences Building, Edmonton, T6G 2E9, Canada).

COMMENT. Memory functions are served by various brain regions, as determined by neuroimaging studies, mainly in healthy young adults. *Working memory*, the processing of information in short-term memory, is subserved by prefrontal and parietal regions. *Semantic memory*, referring to general knowledge, and *episodic memory* for personal experiences, are based in prefrontal and temporal regions. The acquisition of *Skill learning* abilities involves motor, parietal and subcortical regions.

## SEIZURE DISORDERS

### EPILEPSY IN JUVENILE NEURONAL CEROID LIPOFUSCINOSIS

The clinical characteristics of epilepsy and optimal antiepileptic drug therapy were surveyed in 60 patients (mean age 16 years, range 5-33) with juvenile neuronal ceroid lipofuscinosis (JNCL), followed at the University of Helsinki, Finland. Epilepsy, mainly generalized, was diagnosed in 50, and the first seizure occurred at a mean age of 10 years (range 5-16). Median seizure frequency was 4 per year, and seizure control was satisfactory in 72%. Lamotrigine as first choice and valproate were equally effective in seizure control, and carbamazepine was useful as add-on therapy. (Aberg LE, Backman M, Kirveskari E, Santavuori P. Epilepsy and antiepileptic drug therapy in juvenile neuronal ceroid lipofuscinosis. Epilepsia October 2000;41:1296-1302). (Reprints: Dr Laura Aberg, Hospital for Children and Adolescents, Pediatric Neurology, PL 280, 00029 HYKS, Finland).

COMMENT. JNCL is now regarded as a lysosomal disorder, characterized by an intralysosomal accumulation of storage material, subunit c of mitochondrial adenosine triphosphate (ATP) synthetase. The disease is recessively inherited, with the gene locus mapping to chromosome 16, and with several different