

curvilinearly by 0.7 mL/year, while white matter volume remained constant through 5 decades. Cortical CSF volume increased by 0.6 mL/y and ventricular volumes increased by 0.3 mL/y as cortical gray matter decreased. (Pfefferbaum A et al. A quantitative magnetic resonance imaging study of changes in brain morphology from infancy to late adulthood. Arch Neurol Sept 1994;51:874-887). (Reprints: Dr Pfefferbaum, Psychiatric Service (116A3), Palo Alto Department of Veterans Affairs Medical Center, 3801 Miranda Ave, Palo Alto, CA 94304).

COMMENT. Age-related changes in gray-white matter ratio suggest that growth in white matter exceeds that of gray during the first 5 years, continues to expand until age 20 years, whereas gray matter volume declines after age 5. Age 4 years marks the end of gray matter growth and the beginning of a consistent decline throughout the life span. A relation between head size and cortical gray matter is established early and persists into late adulthood. These quantitative studies of normal brain development, reflecting cell growth and death, myelination, and atrophy, provide important comparative data in the investigation of neurodegenerative processes.

DEGENERATIVE DISORDERS

MACHADO-JOSEPH DISEASE

A 22-year-old male of Portuguese Azorean descent, presenting at age 16 years with postural instability and falls and developing severe generalized dystonia by age 20 years, is reported from the Center for Research in Neurodegenerative Diseases, University of Toronto, Ontario, Canada. His parents were first cousins and each had a parent clinically affected by Machado-Joseph disease (MJD). Examination demonstrated in addition to dystonia, slurred speech, horizontal nystagmus, limitation of upward-gaze, unsustained ankle clonus, and flexor plantar reflexes. MRI revealed slight atrophy of the cerebellar vermis. Linkage studies confirmed the recent mapping of the MJD gene to chromosome 14q, and genotyping of the members of this pedigree indicated that this patient was homozygous for the MJD gene. Gene dosage is an important determinant of age at onset and clinical phenotype in MJD. (Lang AE et al. Homozygous inheritance of the Machado-Joseph disease gene. Ann Neurol Sept 1994;36:443-447). (Respond: Dr Lang, Morton and Gloria Shulman Movement Disorder Centre, The Toronto Hospital, Western Division, MP11-306, 399 Bathurst Street, Toronto, Ontario, Canada M5T 2S8).

COMMENT. Three major phenotypes of MJD are described: Type I, Joseph type, with early age of onset and prominent extrapyramidal signs - dystonia, athetosis, rigidity, as well as pyramidal signs; Type III, Machado type, with later onset, cerebellar signs and peripheral neuropathy; and Type II, intermediate type, both with respect to age of onset and clinical features. Juvenile onset of MJD is very uncommon, occurring in only 5 of 143 Portuguese patients cited by these authors.