disorder was thought to be a distinct subtype of HMSN II. (Elliott JL, Kwon JM, Goodfellow PJ, Yee W-C. Hereditary motor and sensory neuropathy IIB: clinical and electrodiagnostic characteristics. Neurology Jan 1997;48:23-28). (Reprints: Dr Jeffrey L Elliott, Department of Neurology, Washington University School of Medicine, 660 S Euclid Ave, St Louis, MO 63110).

COMMENT. Autosomal dominant hereditary motor and sensory neuropathies (HMSNs) are either predominantly demyelinating in type (HMSN I), with slowed conduction velocities and hypertrophic nerves, or axonal (HMSN II), with normal conduction velocities, small compound muscle action potentials, and axonal degeneration. The above report of HMSN IIB appears to be a homogeneous entity, exhibiting linkage to chromosome 3q, younger age at onset, and characteristic clinical and electrodiagnostic features.

A novel point mutation in the peripheral myelin protein 22 (PMP22) gene is reported in association with HMSN I (Charcot-Marie-Tooth type 1A) from the University of Cagliari, Italy. (Marrosu MG, Vaccargiu S, Marrosu G, et al. Neurology Feb 1997;48:489-493). PMP22 protein maintains normal function of peripheral nerve myelin, and the location of the mutation determines the phenotype of HMSN I disease.

DEVELOPMENTAL AND DEGENERATIVE DISORDERS

NEUROANATOMY IN RETT SYNDROME

Volumetric MRI analyses of the cerebral cortex and posterior fossa of 20 girls with Rett syndrome (RS) were compared with individually-matched normal controls at the Kennedy Krieger Institute, The Johns Hopkins University School of Medicine, Baltimore, MD. Gray and white-matter tissue volumes, with the exception of the pons, showed reductions in RS compared to controls. The caudate nucleus showed a disproportionate volume reduction. A reduction in cerebellar measurements followed the general reduction in brain size in RS. Age-related changes were not different from controls, and a progressive neurodegeneration was not evident. Brains of monozygotic twins discordant for RS revealed reduced gray-matter volumes in the RS twin but not in her sister. (Subramaniam B, Naidu S, Reiss AL. Neuroanatomy in Rett syndrome: cerebral cortex and posterior fossa. Neurology Feb 1997;48:399-407). (Reprints: Dr Allan L Reiss, Kennedy Krieger Institute, 707 N Broadway, Rm 509, Baltimore, MD 21205).

COMMENT. These volumetric neuroanatomical studies of Rett syndrome are important in our understanding of developmental and clinical-anatomical correlations. The etiology of RS remains an enigma, and even the genetics of the disorder are undetermined. My colleague, Dr John Wilson, in his introduction to a chapter on RS in Vol III, Progress in Pediatric Neurology, 1997, suggests the process of *apoptosis* as a possible explanation for RS.

Apoptosis in development and disease of the nervous system: 1. Naturally occurring cell death in the developing nervous system, is discussed by Narayanan V, University of Pittsburgh, PA. (Pediatr Neurol Jan 1997;16:9-13). The occurrence of cell degeneration during normal neural development has been studied experimentally in chick embryos, and apoptosis is proposed as the mechanism of infantile spinal muscular atrophy. Substances produced by the target tissue influence the survival of developing neurons. Limb bud removal causes cell degeneration in brachial or lumbosacral

ganglia. In Rett syndrome, the neurons may be genetically defective.

The differentiation of infantile autism and Rett syndrome may be difficult in infancy. The head size can be an important diagnostic indicator. **Macrocephaly in children and adults with autism** is reported from the University of Utah Neuropsychiatric Institute, Salt Lake City, UT. (Lainhart JE, Piven J, Wzorek M, et al. J Am Acad Child Adolesc Psychiatry Feb 1997;36:282-290). In 14% of 91 subjects with autism, the head circumference was above the 97th percentile at a mean age of 14 years (range, 3 to 38 years), even when corrected for height; macrocephaly was usually not present at birth. Accelerated head growth occurs after 4 years of age in 37% of children with autism. MRI studies were mostly normal.

ANGELMAN SYNDROME: MOLECULAR CYTOGENETIC STUDIES

Clinical, neurological, and molecular genetic studies of 22 patients with diagnostic features of Angelman syndrome (AS) are reported from National Taiwan University Hospital, Taipei. A deletion of region 15q11-13 was identified cytogenetically in 11 cases by high-resolution technique. Four cases were confirmed by fluorescence in situ hybridization (FISH). The remaining 7 cases had no deletions over 15q11-13. Clinical features of AS were obvious after 2 years of age. During infancy AS may be mistaken for Rett syndrome, ataxic cerebral palsy, Prader-Willi syndrome, or infantile autism. (Hou J-W, Wang P-J, Wang T-R. Angelman syndrome assessed by neurological and molecular cytogenetic investigations. Pediatr Neurol Jan 1997;16:17-22). (Respond: Dr Hou, Department of Pediatrics, National Taiwan University Hospital, 7 Chung-Shan South Rd, Taipei 10016, Taiwan).

COMMENT. Seizures occur in 80% of cases of Angelman syndrome, usually by 2 years of age, and Boyd and colleagues, Great Ormond Street Hospital, London, have described characteristic EEG findings that are included among diagnostic criteria for AS. In the above report, EEG findings were sometimes absent at an early age, and cytogenetic confirmation of the diagnosis was stressed.

MENKES' SYNDROME WITH CEREBELLAR HYPOPLASIA

A 14-month-old boy with Menkes' kinky hair syndrome (MS) associated with deafness and inferior cerebellar vermian hypoplasia was admitted with convulsions and urinary infection at Karadeniz Technical University, Trabzon, Turkey. Physical findings included microcephaly, growth and weight < 3rd percentile, developmental retardation, coarse wiry hair (pili torti), optic atrophy, and spastic diplegia. MRI showed subdural effusion, cerebral atrophy, and inferior vermian hypoplasia. Cystography revealed bladder diverticulae. Serum copper was 69 g/dl and ceruloplasmin 4.45 mg/dl. (Aynaci FM, Mocan H, Bahadir S, et al. A case of Menkes' syndrome associated with deafness and inferior cerebellar vermian hypoplasia. Acta Paediatr Jan 1997;86:121-123). (Respond: Dr FM Aynaci, Dept of Paediatrics, Faculty of Medicine, Karadeniz Technical University, Trabzon/Turkey).

COMMENT. Several variants of Menkes' syndrome have been recognized, including an ataxic presentation (Menkes JH. Textbook of Child Neurology, Philadelphia, Lea & Febiger). This appears to be the first documentation of a case with cerebellar hypolasia. The syndrome is an X-linked recessive disorder, and the gene has been assigned to Xq 13.