

46th ANNUAL DIAGNOSTIC SLIDE SESSION 2005
CASE 2005-3

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Clinical History:

The patient was a normally developing boy who noted hand tremors at 7.5 years of age, approximately 3 weeks after his last mumps, measles and rubella vaccine. One month later, he exhibited difficulty walking, leg pain and weakness. His gait became stiff legged with the right leg rotated outwards. He was found to have significant action and intention tremor, bilateral lower leg weakness (tibialis anterior), decreased deep tendon reflexes and pes planus. He also exhibited impaired speech articulation.

Despite continued neurological progression, extensive clinical evaluation over the next year demonstrated limited abnormalities. Nerve conduction studies showed slowing of motor and sensory conduction velocities. Electron myography showed giant motor unit potentials suggestive of previous denervation followed by reinnervation. Sural nerve biopsy showed mild axonal degeneration and regeneration suggesting neuroaxonal dystrophy. A skin biopsy was unremarkable. Laboratory values for copper, ceruloplasmin, creatine kinase, lactate, erythrocyte sedimentation rate, anti-nuclear antibody, Lyme serology, thyroid panel, lipoprotein electrophoresis, lysosomal enzymes and complete Charcot-Marie-Tooth Disease DNA panel were normal. Urine amino acids were normal. An EKG was normal. CSF showed 60 leukocytes (99% mononuclear), 0 RBC, protein 31, glucose 56 and lactic acid 1.0. Brain MRI showed mild enlargement of cerebellar sulci and vermian atrophy.

He became wheelchair bound by 9 years of age and was unable to produce speech or control secretions. His tremor became coarser and tongue fasciculations, extensor plantar reflexes and oculogyric crises were noted. Cognitive function remained intact and there was no discernible abnormality of sensation, vision or hearing. A trial of L-dopa produced no noticeable improvement of symptoms. Amantadine was initiated with marked albeit temporary improvement. At 13 years of age, he developed an intercurrent respiratory infection and died of respiratory failure.

Necropsy Findings:

Significant findings were generalized muscle atrophy and emaciation, bilateral pulmonary lobar consolidation and pericardial effusion. The fresh brain weighed 1425 grams. Examination of the fixed hemisected brain was unremarkable except for mild atrophy of the cerebellar hemisphere and vermis. The substantia nigra was not grossly pigmented. Mild atrophy of the ventral roots of the spinal cord was evident. Multiple cross sections of the spinal cord showed no other gross abnormalities.

Material Submitted: 1 H&E stained slide of cerebral cortex and cerebellum
1 Unstained slide of cerebral cortex and cerebellum

Points for Discussion: 1) Diagnosis
2) Pathogenesis