Case 7

Submitted by Drs. Clayton Wiley, Seth Love, Raymond Skoglund and Peter Lampert
Departments of Pathology (Neuropathology) and Neurology
University of California San Diego
La Jolla, CA 92093

Ref #:

Clinical Abstract:

The patient, weighed 3.5 kilograms at birth. His mother, a G2 P1 Ab1 26 year old had developed a febrile flu-like illness during the 8th month of pregnancy. Delivery, at 40 weeks gestation, was uncomplicated. There was no family history of consanguinity or neurological illness except for a maternal cousin who had mental retardation of unknown etiology. The patient had Apgar scores of 6 and 7 at 1 and 5 minutes respectively. He was microcephalic, had bilateral spastic hemiparesis and experienced infantile spasms. CT scan at 6 weeks of age showed that the lateral ventricles were enlarged and the right cerebral hemisphere was smaller than the left.

During the first year of life the patient's psychomotor development was severely delayed. On examination at 18 months of age he weighed 9 kilograms, had a height of 84.5 cms. and had severe scoliosis of the lower spine. His head circumference was 45.5 cms.. Deep tendon reflexes, which had previously been brisk, were diminished or absent. The patient withdrew from pain but was otherwise unresponsive. The optic disks were thought to be normal. EMG showed neurogenic abnormalities and peroneal nerve conduction velocities were 13 meters/sec (normal 39-51 meters/sec). Gastrocnemius muscle and sural nerve biopsies were performed. The muscle showed groups of round atrophic fibers surrounded by adipose and connective tissue without inflammation or necrosis. Myofibers were small (7.5 to 15 microns in diameter) and showed type II C fiber staining characteristics except in one fascicle which included a group of hypertrophic type I fibers. The sural nerve biopsy showed loss of myelinated fibers of all sizes and some thinly myelinated fibers, but no evidence of active degeneration, demyelination or storage abnormality. The patient was diagnosed as having Werdnig-Hoffmann's disease. At 3 years of age, since the parents were considering having another child and in view of the patient's atypical presentation, biopsies were taken from the other sural nerve and the frontal cortex for further neuropathological evaluation. The sural nerve showed further loss of nerve fibers, most remaining fibers appearing atrophic. The frontal cortex and superficial white matter showed only mild gliosis. The patient experienced increasingly frequent bouts of aspiration that led to a terminal pneumonia at 4 years of age. The brain weighed 1,020 gms. and was mildly asymmetric (the left cerebral hemisphere being larger than the right). The optic nerves were thin and gray. In coronal sections the lateral ventricles were dilated, the left more than the right. The corpus callosum was markedly thinned. The cerebellum, brain stem and spinal cord were grossly normal.

Material submitted: 1 H&E slide and 1 unstained slide of the spinal cord.

Points for discussion:

1) Is this a progressive illness?
2) What relation does the pathologic change in the neurons have to other degenerative disorders?