50th ANNUAL DIAGNOSTIC SLIDE SESSION 2009

CASE 2009-7

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Clinical History: This 65 year-old woman carried the diagnosis of relapsing-remitting multiple sclerosis and a peripheral neuropathy for the last 13 years of her life. She had a past medical history of transverse myelitis, neurogenic bladder with an indwelling catheter, constipation, leg spasms, hypothyroidism, hypertension, hypercholesterolemia, and gastroesophageal reflux disease. She had been on immunosuppressive/modifying agents that included Copaxone, Novantrone, Rebif, and Tysabri, and prednisone. Other medications included Neurontin, amitriptyline, Synthroid, atenolol, Lipitor, and Protonix. One of her cousins had multiple sclerosis.

Two months prior to hospitalization, she presented to the Emergency Department for burning, tingling, freezing "pins and needles" sensation of both hands with hand numbness. Tysabri was discontinued.

Two months following this episode, the woman presented to the hospital with acute onset of left hemiplegia, aphasia, and altered consciousness. Within 24 hours, she rapidly deteriorated, and required intubation and mechanical ventilatory support. MRI of the head revealed diffuse ventricular prominence with bilateral linear to nodular periventricular enhancement and abnormal FLAIR signal in the periventricular white matter and basal ganglia extending from the posterior limbs of the internal capsules to the midbrain. No mass lesions were noted. A cerebrospinal fluid sample revealed normal glucose, protein of 135 mg/dl, 6 WBCs/uL (3 lymphocytes, 3 monocytes), no oligoclonal bands, and no infectious agents by cultures or PCR. CSF flow cytometry revealed T-cells with a normal CD4:CD8 ratio, normal antigen expression, and no B-cells. Serologic studies were negative for NMO antibodies. The ESR was 58 mm/hr, ANA was 1:80, and activated C3 value was 1215 ng/ml. A brain biopsy of one of the thalamic lesions was requested by the attending neurologist. The neurosurgeon chose to biopsy the right frontal cortex and caudate nucleus which showed vacuolation and nonspecific changes. Medical treatment included plasmapheresis and high dose steroids. The patient remained unresponsive and died during the hospitalization. A full autopsy was performed.

Autopsy findings: The external surface of the brain was unremarkable. Horizontal brain sections revealed gray discoloration and cystic change in periventricular areas. Symmetrical grayish-tan cleft-like lesions, 2.0 cm in greatest size, involved the posterior internal capsule, thalamus, globus pallidus, and putamen bilaterally. Several similar lesions, 0.3-2.5 cm, were noted primarily in the right frontal lobes and pons, spanning gray-white matter or confined to white matter. The cerebral and middle cerebellar peduncles and pons were soft and swollen. No abnormalities were noted in the cranial

nerves, including the optic nerves or chiasm. The spinal cord was diffusely atrophic with poor delineation of gray and white matter.

General autopsy findings revealed an acute right lower lobe pneumonia.

Materials submitted: 1 hematoxylin and eosin-stained and 1 unstained section of the right or left thalamic lesion (horizontal sections)

Points for discussion: 1. Diagnosis
2. Differential diagnosis