45th Annual Neuropathology Slide Session

Case 2004-5

Submitted by: Sherry Chou, M.D., David N. Louis, M.D., and E. Tessa Hedley-Whyte, M.D. Massachusetts General Hospital, Harvard Medical School, Boston MA 02114

Clinical History:
A 24-year-old woman with history of systemic lupus erythematosus (SLE), chronic steroid use, gastro-esophageal reflux disease, nephrolithiasis, alcohol and narcotic abuse presented in October 2003 with fever and episodic right arm shaking.

The patient developed high fever, joint pain, intermittent tongue numbness and slurred speech in September 2003. Sepsis workup was negative, but intermittent fevers continued. She developed episodic right arm shaking one month later, with secondary generalization into a tonic-clonic seizure. Brain MRI showed a small ovoid, contrast-enhancing lesion in the left parietal lobe (kodachrome figure A and B) without restricted diffusion. CSF analysis showed protein 61, glucose 59, 63 WBC with lymphocytic predominance and 1-2 RBC per high power field. CSF cytology, gram stain, cryptococcal antigen, VZV, CMV, EBV, St. Louis and West Nile IgM, bacterial and AFB cultures were all negative.

Despite empiric treatment with ceftriaxone, acyclovir, pyrimethamine, folinic acid, dapsone, ampicillin, and metronidazole, the patient deteriorated clinically. Brain MRIs showed an increase in size and number of lesions (kodachrome figure C-F). Brain biopsy of a left frontal lesion showed subacute cerebritis with histiocytes, neutrophils, and a group of perivascular atypical lymphocytes. No definitive organisms were found. Repeat brain biopsy two weeks later showed chronic inflammation and granulation tissue. Cerebral angiogram showed no evidence of vasculitis. The patient became progressively obtunded. Sequential MRI and CT showed progressive cerebral edema and uncal herniation. Patient died of refractory cerebral edema two months after her initial presentation.

General autopsy showed acute pulmonary hemorrhage, atelectasis, patchy bibasilar bronchopneumonia, pleural effusion, hepatic centrilobular congestion and steatosis, inactive membranous lupus nephritis, acute tubular necrosis, nephrolithiasis, gastroesophageal junction erosions, mitral valvular fibrosis (Libman-Sachs valvulopathy), and bilateral adrenal gland atrophy. The brain weighed 1200 grams and was swollen, more severely over the left hemisphere. Gross examination revealed no abnormalities in the leptomeninges and spinal cord. There was bilateral uncal and cerebellar tonsiliar herniation. The midbrain and thalami were edematous and hemorrhagic. Cerebral hemispheres contained extensive, ill-defined, contiguous granular, and friable abnormalities in both gray and white matter.

Material Submitted: 1 kodachrome and 1 H+E stained slide

Points for discussion: 1) Diagnosis and the role of biopsy
2) Pathogenesis