

FIGURE 120-1 **A**, Axial fluid-attenuated inversion recovery (FLAIR) image of the brain from a patient with MS revealing classical periventricular and deep white matter high-signal intensity lesions. **B**, Axial T1-weighted image following gadolinium contrast administration in the same patient as **A**. Enhancing lesions after gadolinium contrast administration, indicating loss of integrity of the blood-brain barrier that is seen with active MS lesions. One enhancing lesion in the right parietal region is ring enhancing. **C**, Sagittal FLAIR image of the brain of an MS patient demonstrating classical flame-shaped pericallosal lesions radiating outward from the ventricle. **D**, Axial T1-weighted image showing areas of T1 low signal intensity (“black holes”).

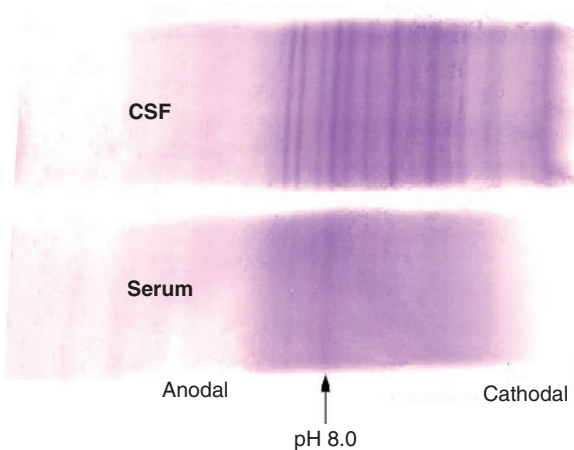


FIGURE 120-2 Isoelectric focusing gel of cerebrospinal fluid (CSF) and serum of a patient with multiple sclerosis. The CSF (*upper lane*) shows oligoclonal bands cathodal to the pH 8.0, which are not seen in the serum (*lower lane*).

have relapses and others display progressive courses. “Red flags” that are atypical for MS, such as non-CNS symptoms (arthritis, rash, pulmonary, or GI symptoms), bilateral hearing loss, peripheral neuropathy, or atypical time of onset (early childhood or after age 50) should lead the clinician to question the diagnosis of MS.

For a deeper discussion of these topics, please see Chapter 411, “Multiple Sclerosis and Demyelinating Conditions of the Central Nervous System,” in Goldman-Cecil Medicine, 25th Edition.

Treatment

MS treatment can be divided into three categories: treatment of symptoms (e.g. spasticity, fatigue, or depression), treatment of acute relapses, and disease-modifying therapies. This discussion will be largely limited to the latter two categories. [Table 120-3](#) lists some major symptoms and their therapies in MS.