Nodular Leptomeningeal Enhancement in Neurosarcoidosis: Before and After Treatment

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Keywords

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Figure 1. Brain magnetic resonance imaging (MRI) gadolinium-enhanced T1-weighted images, axial (A-D) and coronal planes (E-H), show nodular leptomeningeal thickening and enhancement surrounding the brain stem (A and E, arrows) as well as the infundibulum and optic chiasm (B and F, arrows). Repeat imaging after 5 weeks of therapy (C and D, G and H) demonstrates marked interval improvement.

A 38-year-old man presented with 1 year of leg weakness. Examination showed proximal limb weakness, distal sensory loss, and diffuse hyperreflexia. Magnetic resonance imaging (MRI) of the brain and spinal cord showed multifocal nodular leptomeningeal enhancement (Figures 1 and 2). Cerebrospinal fluid analysis demonstrated lymphocytic pleocytosis, elevated protein, and undetectable glucose. Additional testing revealed panhypopituitarism and syndrome of inappropriate antidiuretic hormone secretion. Computed tomography of the chest showed a few slightly prominent mediastinal lymph nodes, which had mildly increased fluorodeoxyglucose activity on a subsequent positron emission tomography. Lymph node

biopsy demonstrated noncaseating granulomas, establishing the diagnosis of sarcoidosis. Other granulomatous diseases, including tuberculosis and fungal infections, were excluded.

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Figure 2. Cervical spine magnetic resonance imaging (MRI) gadolinium-enhanced T1-weighted images, sagittal planes. At presentation, there was extensive nodular leptomeningeal enhancement along the ventral aspect of the cervical cord and brain stem, as well as the inferior cerebellar folia (A, arrows). Allowing for differences in the scanner, repeat imaging shows near-complete resolution of abnormalities after 5 weeks of therapy (B).

The patient was treated with methylprednisolone 5 g over 1 week. He was later placed on prednisone 80 mg daily and appropriate hormonal replacement. He was noncompliant with therapy and was lost to follow-up. He presented again 11 months later. Examination was similar to his initial presentation, except for new left optic neuropathy. Repeat MRI was grossly unchanged. He was treated with the same regimen of corticosteroids plus methotrexate 15 mg weekly and had significant clinical and radiologic improvement (Figures 1 and 2).

Neurosarcoidosis occurs in 5% to 13% of patients with systemic sarcoidosis.¹ The diagnosis is challenging as any part of the central and peripheral nervous systems can be affected.² The most common manifestations are cranial neuropathy and aseptic meningitis.^{1,2} Magnetic resonance imaging shows a wide spectrum of abnormalities, but the most common pattern is leptomeningeal thickening and enhancement.^{3,4} Clinical improvement correlates with resolution of radiologic abnormalities, as in our patient.⁴

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References

1. Lacomis D. Neurosarcoidosis. *Curr Neuroparmacol*. 2011;9(3):429-436.
2. Hoyle JC, Jablonski C, Newton HB. Neurosarcoidosis: clinical review of a disorder with challenging inpatient presentations and diagnostic considerations. *Neurohospitalist*. 2014;4(2):94-101.
3. Smith JK, Matheus MG, Castillo M. Imaging manifestations of neurosarcoidosis. *AJR Am J Roentgenol*. 2004;182(2):289-295.
4. Lexa FJ, Grossman RI. MR of sarcoidosis in the head and spine: spectrum of manifestations and radiographic response to steroid therapy. *AJNR Am J Neuroradiol*. 1994;15(5):973-982.