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Intramedullary Spinal Cord Tuberculoma in a Patient with AIDS

Elias R. Melhem and Henry Wang¹

Summary: Intramedullary spinal cord tuberculoma in a young, homosexual man with AIDS was detected with the use of MR and confirmed pathologically. MR findings were similar to those seen in other intramedullary lesions, eg, astrocytoma, ependymoma, hemangioblastoma, metastasis, lymphoma, and opportunistic infections. Delineation of the lesion improved with administration of Gd-DTPA; enhancement of the lesion, however, does not always correlate with true tumor margins at pathologic examination.

Index terms: Tuberculosis, spinal; Tuberculoma; Spinal cord, magnetic resonance; Acquired immunodeficiency syndrome (AIDS)

A case of intramedullary spinal cord tuberculoma detected by magnetic resonance (MR) and confirmed at pathology in a 22-year-old man with AIDS is presented. A brief review of the literature as well as a differential diagnosis of the common intradural spinal cord lesions with similar MR findings are listed.

Case Report

This 22-year-old homosexual man presented with progressive bilateral leg weakness, a 3-week history of left buttock and left leg pain, cold induced dysesthesias, and numbness in the left leg, accompanied by urinary and bowel urgency, night sweats, and painful masses in the axillary and groin regions. At the time of admission, the patient had no AIDS-defining illnesses. The temperature was 37.2°C. There was oral thrush and adenopathy in the cervical, axillary, and inguinal areas. A sensory level at T11 with loss of superficial lower abdominal reflexes, decrease in proprioception in right and left big toes, cold-induced dysesthesia in left lower extremity, and hyperalgesia in both lower extremities was found. The muscle strength in both lower extremities was 4+/5 with hyperreflexia and the Babinski sign was present bilaterally. Cerebrospinal fluid analysis: WBC 6 (17% polys, 83% monos), RBC 6 protein 212 mg%, glucose 31 mg% (serum glucose: 73

mg%). PPD and HIV (ELISA and Western blot) were positive (T4-helper cell count 357).

Chest radiograph revealed diffuse reticulonodular infiltrates in both lung fields with bilateral paratracheal and hilar adenopathy. Thoracic spine MR with and without intravenous Gd-DTPA included precontrast T1W sagittal (Fig. 1), postcontrast T1W sagittal (Fig. 2), T2W sagittal (Fig. 3), and axial (Fig. 4) images.

Cultures of the bronchial washings from bronchoscopy grew *Mycobacterium tuberculosis*. The transbronchial lung biopsy revealed no evidence of *Pneumocystis carinii* or acid-fast bacilli. Left inguinal lymph node biopsy showed caseous necrosis and acid fast bacilli. The patient was placed on intensive antituberculous therapy for 2 weeks without clinical improvement. Subsequently, resection of the spinal cord lesion through a T9–T11 laminectomy revealed a grayish, stringy, hard intramedullary lesion without surrounding capsule and pathologically demonstrated acid fast bacilli and caseous necrosis.

After surgical resection of the intramedullary tuberculoma, the patient's neurologic symptoms improved and he was discharged with moderate residual neurologic deficit.

Discussion

Intradural and intramedullary tuberculous lesions of the spinal cord have become rare since the advent of antituberculous treatment. Only recently has there been a resurgence of cases of tuberculous infections involving various organs of the body, especially in patients who are immunocompromised.

Spinal cord lesions, although far less frequent than brain lesions, are not uncommon in AIDS patients. Of those, infectious processes including: human immune deficiency virus (vascular myelopathy), cytomegalovirus, herpes simplex virus (1, 2) and *Toxoplasma gondii* (3), are the most common. Neoplastic processes (4, 5) primarily, non-Hodgkin lymphoma of the spinal cord has

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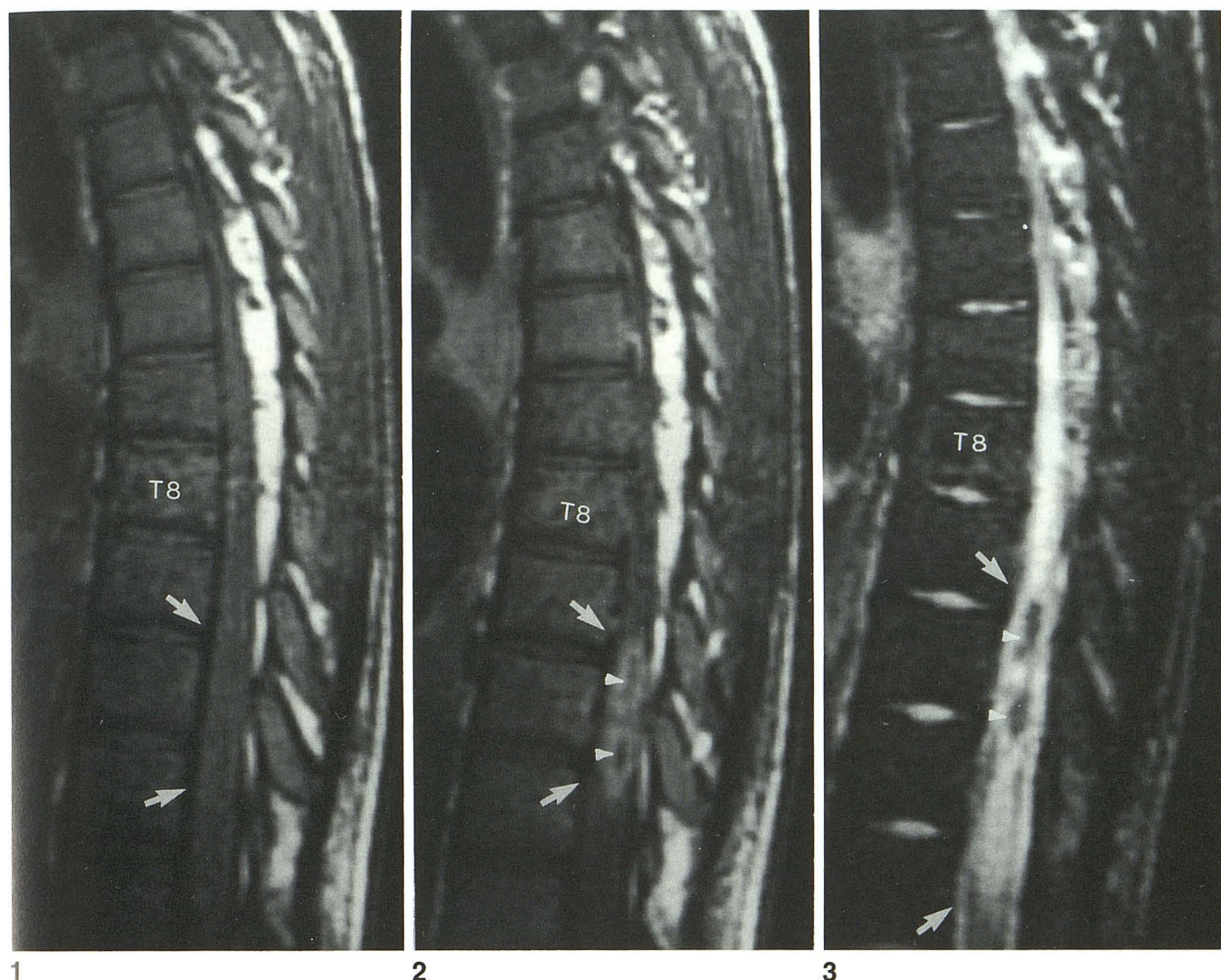


Fig. 1. MR T1W (500/20-TR/TE) unenhanced sagittal image in the region of the mid and lower thoracic spine. Moderate enlargement of the caliber of the spinal cord extending from the level of T9 to the level of T11 (arrows).

Fig. 2. T1W (500/20-TR/TE) Gd-DTPA-enhanced sagittal image in the region of the mid and lower thoracic spine. High signal intensity, hourglass-shaped, intramedullary lesion (arrows) with central areas of isosignal intensity (arrowheads).

Fig. 3. T2W (2124/100-TR/TE) sagittal image in the region of the mid and lower thoracic spine. High signal intensity in the spinal cord extending from the level of T9 to the level of T1-T2 (arrows) with central areas of isosignal intensity (arrowheads).

been reported in AIDS patients (4). Also spinal cord infarctions secondary to acute or chronic vasculitis or less specific vascular processes such as disseminated intravascular coagulation seem to be relatively frequent in AIDS patients (1). Spinal cord tuberculoma has not been previously reported in this specific group of immunocompromised patients.

In 1960, prior to the AIDS epidemic, Lin reviewed a total of 104 cases of intramedullary spinal cord tuberculoma reported in the literature (5). Since, there has been no reported cases of purely intramedullary tuberculoma in the litera-

ture; in 1981, Gokelp and Ozkel (6) reported one case of intradural extramedullary spinal cord tuberculoma.

According to previous reports, there is an even distribution of spinal cord tuberculomas in the cervical, thoracic, and lumbosacral portions of the spinal cord. Also, the majority of these lesions are associated with foci of tuberculosis elsewhere in the body. In our particular case, the patient had both pulmonary and extrapulmonary tuberculosis infections, with the latter being an AIDS-defining illness according to the current Center for Disease Control criteria.

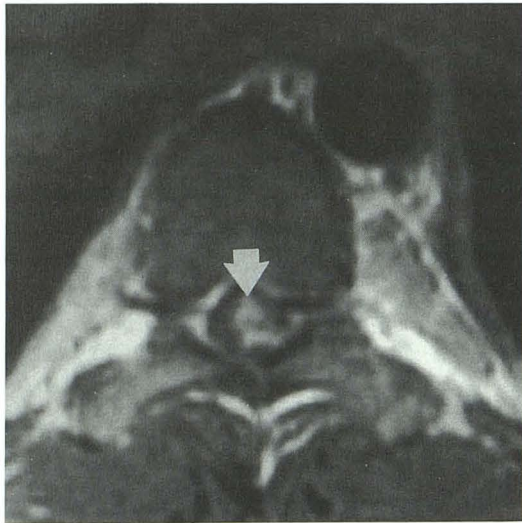


Fig. 4. T1W (500/20-TR/TE) Gd-DTPA-enhanced axial image at the level of T10 vertebral body. High signal intensity in the intramedullary spinal cord lesion (arrow).

The MR findings of intramedullary spinal cord tuberculoma on T1-weighted pre- and post-Gd-DTPA enhancement and T2-weighted images, show definite similarity to other neoplastic and non-neoplastic intramedullary lesions including: astrocytoma, ependymoma, hemangioblastoma, metastasis, lymphoma, multiple sclerosis, infarction (7), and opportunistic infections.

In addition, this case attests to the improved lesion detection and delineation with Gd-DTPA administration (7), inasmuch as the intramedul-

lary tuberculoma was difficult to distinguish from surrounding spinal cord parenchyma on T1-weighted images, and from perifocal edema on T2-weighted images. However, it must be emphasized that lesion enhancement with Gd-DTPA does not always correlate with exact tumor margins at pathologic examination.

Finally, the central regions of isosignal intensity, as compared to the spinal cord parenchyma, within the Gd-DTPA enhancing intramedullary lesion, most likely represents uninvolved spinal cord parenchyma or nonenhancing infected tissue (7).

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