A 23-year-old Hispanic man was admitted for bilateral arm weakness. Two weeks earlier, he had fallen forward on an outstretched left arm and developed pain. One day after visiting a local chiropractor for manipulation of his upper arms and back, he noted weakness and numbness in his arms as well as bilateral shoulder pain. There was no lower extremity weakness or bowel or bladder dysfunction. He denied fever, night sweats, chest pain, tuberculosis exposure, or cough. He did not smoke, and he had previously worked as a car painter.

Physical examination was remarkable for diminished breath sounds over the entire right hemithorax. Strength was decreased in the biceps, triceps, and wrist extensors bilaterally (rated 3 to 4 on a 5-point scale). Deep tendon reflexes of the upper extremities were symmetrically decreased, while light touch sensation was impaired in the C-3 to C-5 distribution.

A posteroanterior chest radiograph (Fig 1) showed extensive right pleural thickening with volume loss and a left apical nodular infiltrate. A lateral cervical spine radiograph (Fig 2) revealed a C-4 vertebral fracture with posterior dislocation.
Diagnosis: Pulmonary tuberculosis with C-4 Pott's disease and polyradiculopathy

Our patient was placed in halo traction with slight improvement in strength. Computed tomography of the cervical spine revealed complete destruction of the anterior half of the fourth vertebral body and left transverse process with preservation of the remaining vertebrae. Additionally, a prevertebral abscess was present from C-2 to the midportion of C-6. An admission tuberculin skin test was positive, and two expectorated sputum specimens were + smear-positive for acid-fast bacilli. He was started on a regimen of isoniazid, rifampin, ethambutol, and pyrazinamide. Despite 8 weeks of treatment, his neurologic deficits persisted. A specimen obtained by percutaneous computed tomography-guided needle aspiration of the C-4 vertebral body grew Mycobacterium tuberculosis. He subsequently underwent an anterior decompensation with C-4 corpectomy and C-3 to C-5 strut fusion. Microscopic examination of prevertebral tissue revealed caseating granulomas with negative smears for acid-fast bacilli.

Skeletal tuberculosis occurs in 1 percent of all cases of tuberculosis, and spine involvement constitutes 50 percent of all skeletal involvement. Tuberculosis of the spine, or Pott's disease, typically involves the thoracic and lumbar regions, while cervical involvement is rare. Spinal tuberculosis generally occurs in children from developing countries and in adults in the United States and Europe. Clinically, cervical Pott's disease manifests as neck pain and stiffness, often with torticollis, variable neurologic deficits, fever, anorexia, and occasionally dysphagia and cutaneous sinus drainage in the neck.

Neurologic involvement upon presentation occurs in 15 to 42 percent of patients and often appears gradually and symmetrically after the onset of pain. Cervical spine involvement may also present as an abscess in the posterior triangle of the neck or as a retropharyngeal abscess. Diagnostically, 70 percent of patients have a positive tuberculin skin test, and up to 50 percent of patients have chest radiographs consistent with prior or current tuberculosis.

Radiographs of the cervical spine typically reveal anterior vertebral body destruction associated with disc space narrowing and kyphosis. Computed tomography demonstrates contiguous vertebral involvement in approximately 50 percent of cases and often a coexistent paraspinous abscess. Although the total skeletal bacillary load in spinal tuberculosis is estimated to be less than 10^6 organisms, histologic confirmation occurs in 73 percent of cases. Of these, positive bone cultures occur in 80 to 95 percent.

Metastatic carcinoma, fungal and pyogenic infections may be difficult to differentiate from tuberculous spondylitis. Metastatic carcinoma tends to occur in older individuals with a known primary lesion and may present with multiple vertebral involvement. In contrast to tuberculous spondylitis, a secondary malignancy usually spares the intervertebral disk space but involves the pedicles. Paravertebral soft-tissue involvement is typically small and localized adjacent to a collapsed vertebral body. Disseminated coccidioidomycosis can also involve noncontiguous vertebrae with sparing of the intervertebral discs. Vertebral coccidioidomycosis also tends to involve all portions of the vertebrae as well as destruction of contiguous ribs. In contrast, pyogenic spondylitis, like tuberculous spondylitis, causes narrowing of the intervertebral disc height. However, if posterior vertebral body destruction and new bone formation are present, this suggests pyogenic, rather than tuberculous, infection. Ultimately, diagnosis relies on the clinical setting and tissue confirmation.

In the pre-rifampin era, at least 18 months of various combinations of isoniazid, aminosalicylic acid, and streptomycin was recommended for spinal tuberculosis. Currently, isoniazid and rifampin regimens of 6 to 9 months' duration are felt to be effective. However, if significant tissue destruction is present, prolonged treatment for up to 18 months may be necessary.

The indications for surgery, particularly when neurologic deficits are present, remain controversial. Most studies have been performed with younger ambulatory patients (often aged less than 10 years) who had predominantly thoracolumbar tuberculosis. Presently, medical treatment for 4 to 6 weeks is recommended before considering surgical intervention. If the neurologic deficits fail to improve or rapidly deteriorate, then anterior spinal decompression with spinal fusion should be considered. Postoperatively, the cervical spine remains immobilized until evidence of radiographic union is apparent.

Although spinal tuberculosis is relatively rare, its prompt recognition and treatment may prevent irreversible neurologic impairment. Our patient is unusual in that he presented acutely after chiropractic manipulation. Except for the preservation of intervertebral disc spaces, the radiographic findings were most consistent with tuberculosis. The marked pleural thickening on the chest radiograph might suggest metastatic adenocarcinoma or even mesothelioma, which, although possible, would be unusual in this age group. Microscopic analysis of sputum and prevertebral tissue ultimately confirmed the diagnosis.

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