

Tuberculous Spondylitis: a case report

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A 21 year old oriental male presented with a one month history of neck pain associated with neck stiffness and dysphagia. A five week course of chiropractic treatment relieved most of his symptoms. Due to persistent tenderness in the suboccipital region and substantial weight loss, he was subsequently hospitalized. Further investigations revealed tuberculous osteomyelitis affecting the left lateral mass of C₁ and likely the C₂ vertebra. Tuberculous spondylitis accounts for more than 50% of all cases of skeletal tuberculosis and is the most common cause of vertebral infection, particularly in young people.

KEY WORDS: Tuberculosis, spine, infection, chiropractic

Introduction

Spinal tuberculosis was first described by Sir Percivall Pott (1714-1788), and since then has been widely known as Pott's disease of the spine.¹ World-wide, tuberculosis is still a major medical problem with an estimated 15 to 20 million cases.^{2,8} Although the majority of these cases occur in the developing countries, tuberculosis is not rare in the technically advanced countries.² Tuberculosis remains endemic in the United States with an estimated incidence of 15.9 cases per 100,000 population.⁴ The incidence of pulmonary tuberculosis has decreased over the past decade, however, the frequency of extrapulmonary tuberculosis remains unchanged.⁵ Tuberculous spondylitis is still the most common cause of vertebral infection, particularly in young people.⁶

Tuberculosis of bone and joints is dominated by spinal involvement, which accounts for more than 50% of all cases of skeletal tuberculosis.⁵ Pott's disease is often associated with an insidious onset and nonspecific initial symptoms, factors which make early diagnosis a challenge. Frequently several months may elapse before the correct diagnosis is made. Progression of untreated spinal tuberculosis may result in profound skeletal and neurological damage.

Case report

Mr. S.L., a 21 year old oriental male presented with a one month history of neck pain associated with neck stiffness. As well he complained of difficulty in swallowing. These symptoms were insidious in nature and appeared abruptly upon awakening one morning. He explained that there was pain in the cervicoccipital region of the spine that was localized and more intense with flexion, extension, or a recumbent position. There was no radiation into the extremities, paraesthesia or

Un homme âgé de 21 ans, de race orientale, se présente avec une anamnèse de douleur de la région cervicale associée à une raideur de la nuque et de la dysphagie. Un traitement de chiropraxie de 5 semaines soulage la plupart de ses symptômes. En raison d'une sensibilité persistante de la région sous-occipitale et d'une perte pondérale importante, il est alors hospitalisé. Des investigations supplémentaires révèlent une ostéomyélite tuberculeuse touchant la région latéro-ile gauche de C₁ et probablement la vertèbre C₂. La spondylite tuberculeuse rend compte de plus de 50% de tous les cas de tuberculose du squelette, et elle est la cause la plus commune d'infection vertébrale, surtout chez les jeunes.

MOTS-CLEFS: tuberculose, colonne vertébrale, chiropraxie

weakness. He gave no history of arthralgia or arthritis in other joints. However, he did complain of intermittent difficulty on opening his mouth due to an apparent stiffness of the temporomandibular joints, a condition generally worse at night. Coughing or sneezing did not aggravate his pain. Recently he had noted dizziness with a squatting posture. He was also aware of a swelling in the submaxillary region that became more prominent as the day passed. This patient's dysphagia limited his dietary intake to liquids only. (And may have accounted for his loss of 20 pounds because of his inability to swallow solid foods).

One month prior to the onset of his neck pain, this patient attended his family physician for an apparent sore throat which had seemingly not resolved with a course of penicillin. Mr. S.L. had also been seen by a throat specialist.

Two weeks following onset, Mr. S.L. attended an acupuncturist for 5 acupuncture treatments as well as 2 sessions of spinal manipulation without relief.

Other past health history is unremarkable and he denied any continuing health problems prior to consulting this clinic. Both his parents and his three sisters were alive and well. Mr. S.L. was a student in Grade 13.

On examination Mr. S.L. was 5 foot 11 inches, 145 pounds, with a BP of 100/80 mm Hg, and a resting pulse rate of 50 beats per minute. His head, neck and shoulder were poorly postured. The head appeared tilted to the left. Jaw excursion was moderately limited. Cervical spine palpation revealed painful restriction in all ranges of motion and elicited tenderness in the suboccipital region. No cervical lymph nodes were palpable. Extremity reflexes were 2+, brisk and symmetrical. Babinski was absent. A provocation test for vertebro-basilar ischemia failed to elicit any symptoms.

X-rays of his cervical spine showed altered upper-to mid-cervical spine kinematics and were otherwise unremarkable.

A diagnosis of upper cervical posterior joint dysfunction with hypertonicity of the surrounding musculature was made.

The patient was treated for 5 weeks with mild manual trac-

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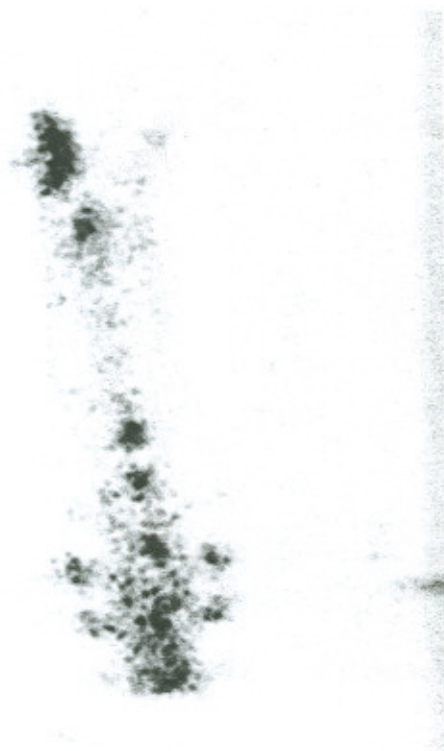


Figure 1: Bone scan

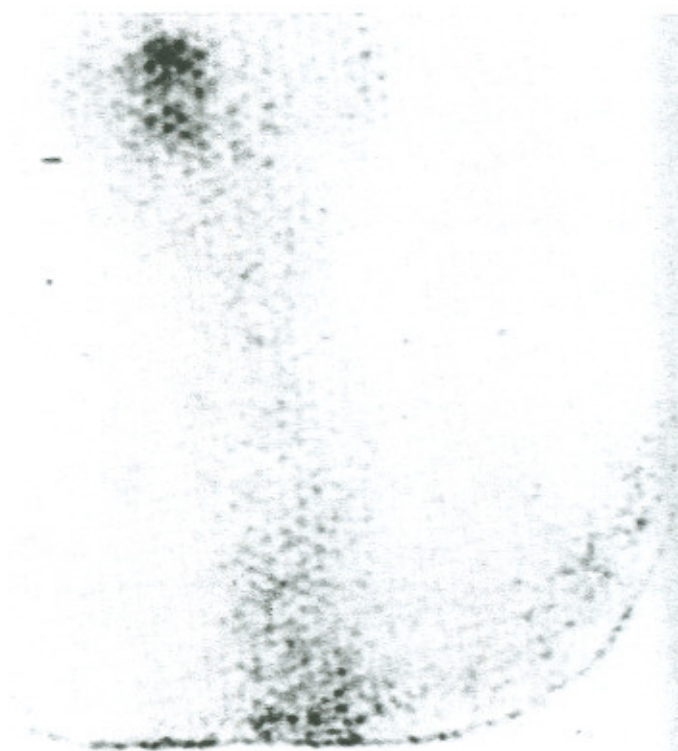


Figure 2: Gallium scan



Figure 3: Tomogram



Figure 4: Plain film

tion, trigger point therapy and stretching of the involved musculature. The patient managed to regain all active ranges of motion of his cervical spine within 4 treatments, however, on subsequent visits continued to complain of persistent tenderness in the suboccipital region. Due to the persistence of the symptoms the patient was referred to a physiatrist for further evaluation. The patient was hospitalized and a presumptive diagnosis of tuberculous osteomyelitis affecting the left lateral mass of C₁ and likely the C₂ vertebra was made. This diagnosis was based on a positive TB skin test, positive bone scan (figure 1) and gallium scans (figure 2), as well as a definite bone lesion being apparent on tomography (figure 3). Although this was not apparent on the plain films (figure 4) and was less definite on a CT scan, the patient did not agree to an open biopsy which would have led to a definite diagnosis of this condition. The apparent pharyngeal lesion turned out to be an area of local muscle spasm which disappeared under anesthesia. Mr. S.L. was then discharged with antituberculous chemotherapy, prescribed for a year's duration. Follow-up revealed that the patient improved considerably.

Discussion

Spinal tuberculosis may originate from hematogenous spread of pulmonary infection or direct extension from involved lymph nodes. The majority of sources support the hematogenous spread as the primary mode of spinal involvement.^{3,6,7} The lower thoracic and the lumbar spine are the most common areas to be affected. In one series of 123 patients, 137 areas of spinal involvement were detected. Nineteen of the spinal tuberculosis lesions were located in the cervical spine, 76 in the thoracic spine and 36 in the lumbar spine⁴ (table 1). The focus of infection begins usually in the anterior third of the vertebral body or within the paraspinal soft tissues directly adjacent. Frequently more than one vertebral body is involved. The infection tends to spread beneath both the anterior and the posterior longitudinal ligaments to involve the adjacent vertebrae. Intervertebral disc space narrowing is felt to be a secondary phenomenon that occurs when destruction of the cancellous bone permits herniation of the disc into the affected vertebral body.⁴ The disc space is maintained longer in tuberculous spondylitis than in pyogenic infection apparently because tuberculosis does not produce proteolytic enzymes.⁸ Less common

spinal tuberculosis may have an atypical presentation with its infective focus being in the neural arch without affecting the disc space or the vertebral bodies. This is frequently accompanied by signs and symptoms of compression of the spinal cord or cauda equina.^{9,10}

Tuberculous spondylitis is a disease primarily of older adults of more than 40 years of age. However, in settings such as Africa or Asia, it is much more frequently encountered in children and young adults. The clinical presentation usually includes the insidious onset of pain with tenderness overlying the affected vertebrae, weight loss, anorexia, local swelling, low grade fevers, chills and nonspecific constitutional symptoms of varying duration. In more advanced stages the disease may present with neurological deficits, clinically apparent cold abscesses and sinus tracts, and kyphotic deformities of the spine. The duration of symptoms before presentation may range from weeks to years with an average duration of approximately one year.⁷

The chest roentgenogram in patients with spinal tuberculosis may frequently show active or healed tuberculous foci, however, a diagnosis of spinal tuberculosis cannot be ruled out on the basis of a normal chest film (figure 5, 6). Roentgenographic examination of the spine may initially reveal rarefaction of the vertebral end-plates and paravertebral abscesses with a characteristic fusiform soft tissue swelling. These abscesses do not usually pass through the level of the diaphragm, but may extend extra-pleurally producing the radiologic appearance of empyema. As an extension of cervical spine involvement, a cold abscess may present in the posterior triangle of the neck or as a retropharyngeal abscess.⁷ Pus may also track along soft tissue planes to produce a fascial abscess. The psoas muscle abscess is a fascial abscess which appears on the X-ray as a lateral bowing of the psoas margin. This may lead to contracture of the psoas muscle and flexion deformity of the hip because of resultant intramuscular fibrosis.⁷ More advanced radiographic signs include vertebral body destruction, often with anterior wedging, disc space narrowing and gibbus deformity. Computerized tomography and radionuclide scintiscans are valuable in the diagnosis of spinal tuberculosis, extent of involvement and response to therapy. The plain film, including tomography, remain the single most valuable and simple tools for determining osseous destruction, including number of vertebral bodies affected, presence of soft tissue abscesses and delineation of which portion of the vertebra are affected.⁷

The routine lab work-up should include a CBC, ESR, and tuberculin skin test. A definite bacteriologic diagnosis is made by culturing the infecting mycobacteria after having them obtained from the involved site either by needle aspiration or by biopsy.⁵

The differential diagnosis of lesions that can be confused with tuberculous spondylitis may include: pyogenic and fungal osteomyelitis, benign and malignant neoplasms, metastatic tumors, multiple myeloma, aneurysmal bone cyst, eosinophilic granuloma and scheuermann disease.

Table 1:

LOCATION OF SPINAL LESIONS

C ₁ - C ₂	7
C ₃ - C ₇	12
T ₁ - T ₆	27
T ₇ - T ₁₂	49
L ₁ - S ₁	36
No Bone Lesion	6
TOTAL	137

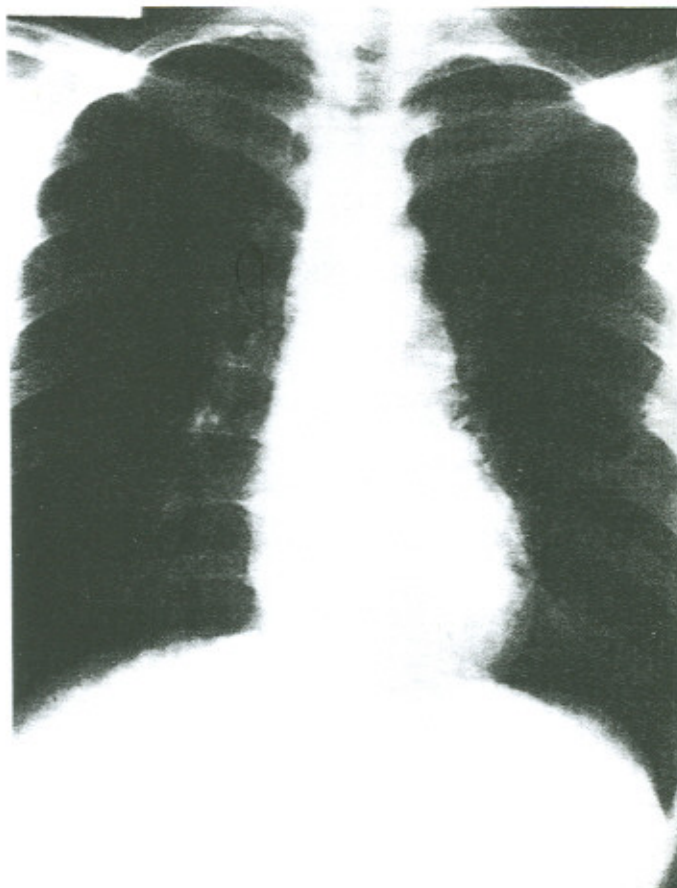


Figure 5: Normal PA chest

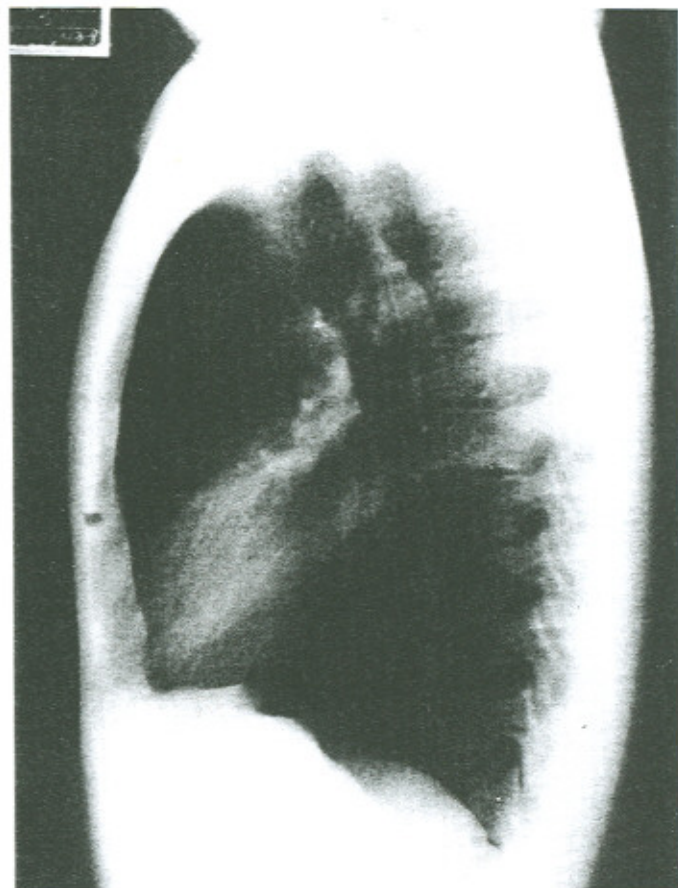


Figure 6: Normal lateral chest film

Once the diagnosis is established, anti-tuberculous chemotherapeutic agents are the cornerstone of therapy. Indications for surgical intervention and the extent of surgery remain controversial. Surgical decompression of the spinal cord appears indicated in situations where rapid loss of neurologic function is evident or in which progressive deterioration in spinal cord function continues in face of apparently adequate drug therapy.⁷

Conclusion

In the patient that presents with spinal pain and nonspecific constitutional symptoms of insidious onset, tuberculous spondylitis is still an important diagnostic consideration. Conventional radiography, including tomography, remain important diagnostic aids. If spinal tuberculosis is considered in the clinical impression, prompt referral to the appropriate health facilities is of importance. Spinal tuberculosis is a curable disease, but early treatment demands early diagnosis.

References

- 1 Dorland's Illustrated Medical Dictionary. 26th ed. Philadelphia: W.S. Saunders, 1981.
- 2 Griffiths DL. Tuberculosis of the spine: a review. *Adv Tuberc Res* 1980;20:92-110.
- 3 Whelan MA, Maidich DP, Post JD, Chase NE. Computed tomography of spinal tuberculosis. *J Comp Assist Tomography* 1983;7(1):25-30.
- 4 Weaver P, Lifeso RM. The radiological diagnosis of tuberculosis of the adult spine. *Skeletal Radiol* 1984;12:178-186.
- 5 Shivaram U, Wollschlager C, Khan F, Khan A. Spinal tuberculosis revisited. *South Med J* 1985;78(6):681-684.
- 6 LaBerge J, Brant-Zawadzki M. Evaluation of Pott's Disease with computed tomography. *Neuroradiology* 1984;26:429-434.
- 7 Gorse GJ, Pais MJ, Kusske JA, Cesario TC. Tuberculous spondylitis: a report of six cases and a review of the literature. *Med* 1983;62(3):178-193.
- 8 Forrester DM, Nesson JW. *The Radiology of Joint Disease*. Philadelphia: W.B. Saunders, 1973:410-419.
- 9 Babiulkar SS, Tayade WB, Babhulkar SK. Atypical spinal tuberculosis. *J Bone Joint Surg* 1984;66(2):239-242.
- 10 Naim-ur-Rahman. Atypical forms of spinal tuberculosis. *J Bone Joint Surg* 1980;62(2):162-165.