



Visual Case Discussion

Lower extremity weakness: A rare case of extrapulmonary tuberculosis

Suraj Rijal^{a,*}, Sunil Adhikari^a, Darlene R House^b^a Department of General Practice and Emergency Medicine, Patan Academy of Health Sciences, Kathmandu, Nepal^b Department of Emergency Medicine, Indiana University School of Medicine, Indianapolis, IN, USA

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A 25-year-old man previously healthy presented to the ED with sudden onset lower extremity weakness and urinary retention. Patient denied recent trauma. Review of systems revealed mild low back pain and history of fever for 6 weeks. On exam, he had tenderness over the lumbar spine, bilateral lower extremity strength of 1/5, decreased sensation to pain and light touch, and intact deep tendon reflexes.

Brain/spine MRI showed high signal intensity with destruction in L2-L5 vertebral bodies (*Image 1*); enhancing conus medullaris and nerve roots; longitudinal extensive transverse myelitis from C1-T2 (*Image 2*); and tuberculomas in cerebral and cerebellar hemispheres and brainstem (*Image 3*). HIV was negative. Cerebrospinal fluid (CSF) cultures and AFB smears were negative. CSF ADA level was 63 U/L. CSF GeneXpert assay for tuberculosis (TB) was positive. Patient significantly improved on anti-TB therapy and was walking upon follow-up.



Image 1. Lumbar spine MRI with bony destruction of L2-L5 vertebral bodies.

* Corresponding author.

E-mail addresses: surajrijal@pahs.edu.np (S. Rijal), suniladhikari@pahs.edu.np (S. Adhikari), dhouse@iu.edu (D.R. House).

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Image 2. High signal intensity in cervical spinal cord from C1-T2 consistent with longitudinal extensive transverse myelitis. Also, a tuberculoma can be seen in the brainstem.

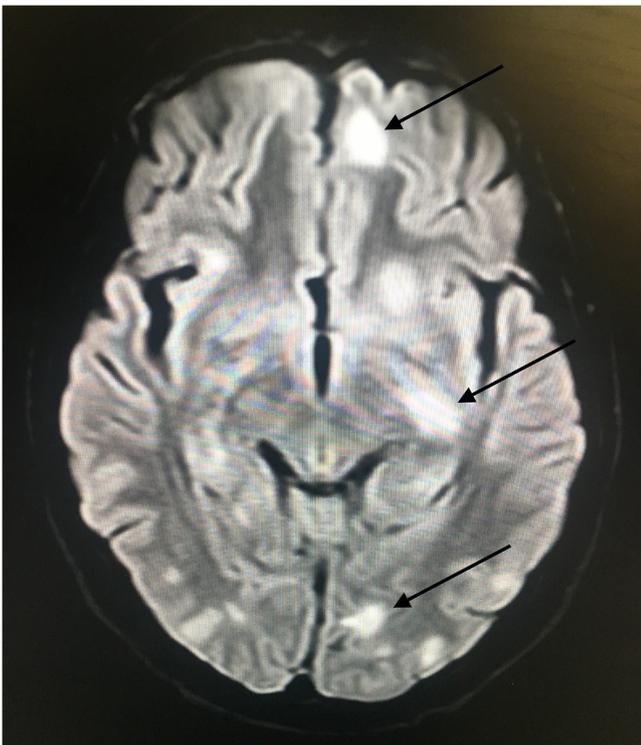


Image 3. Multiple tuberculomas in bilateral cerebral hemispheres.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.visj.2018.10.007](https://doi.org/10.1016/j.visj.2018.10.007).

Questions

- The most common site for extrapulmonary tuberculosis is:
 - Bone
 - Central nervous system
 - Genitourinary system
 - Lymphatic system
 - Pericardium
- When the diagnosis of tuberculosis is suspected, the gold standard for diagnosis is:
 - Acid-fast bacilli (AFB) smear
 - Culture
 - Gene Xpert MTB/RIF assay
 - Interferon-gamma release assay

Answers

- Lymphatic system. Explanation: Extrapulmonary TB represents 20% of all active cases seen. The most common site of extrapulmonary TB is in the lymphatics often presenting as painless lymphadenopathy. Genitourinary is a common site of extrapulmonary TB, resulting from hematogenous spread during pulmonary TB or miliary disease. Skeletal TB represents 10-35% of all cases of extrapulmonary TB with the most common form being Pott's disease of the spine. The central nervous system is involved in 5% of all extrapulmonary TB and often manifests as TB meningitis or tuberculomas. Longitudinal extensive transverse myelitis is a rare presentation of tuberculosis, especially in conjunction with tuberculomas, which can look much like multiple sclerosis. Reference: Sokolove, PE, Derlet RW. Chapter 127: Tuberculosis. *Rosen's Emergency Medicine: Concepts and Clinical Practice, Ninth Edition*. Philadelphia, PA. Elsevier, Inc. 2018: 1682-1692e2.
- Culture. Explanation: Conventional mycobacterium culture remains the most sensitive test for detection of TB. Sensitivity and specificity are 80 and 98% respectively. AFB smears are typically done on sputum or other fluid and lack adequate sensitivity (45-80%). Additionally, AFB positive smears may represent either *M. tuberculosis* or nontuberculous mycobacterium, requiring culture or nucleic acid amplification for further identification and drug susceptibility testing. Gene Xpert MTB/RIF assay is a nucleic acid amplification test that is more sensitive than smears, but less sensitive than cultures. Interferon-gamma release assay (IGRA), like the tuberculin skin test (TST), is used a screening test used for detection of TB infection; however, it cannot establish the diagnosis of TB. References: Bernardo, J. Diagnosis of pulmonary tuberculosis in adults. Uptodate. Last updated July 2018. (Accessed on August 16, 2018); Sokolove, PE, Derlet RW. Chapter 127: Tuberculosis. *Rosen's Emergency Medicine: Concepts and Clinical Practice, Ninth Edition*. Philadelphia, PA. Elsevier, Inc. 2018: 1682-1692e2.