

The Re-Emergence of an Ancient Disease: A Case Presentation of Spinal Tuberculosis

Danay Herrera, DO, Nargisa Ergasheva, MD, Paola Solari, MD, Daniel Kaswan, MD, Bryan Greendield, MS3

Introduction

An ancient disease identified in Egyptian and Peruvian mummies, tuberculous spondylitis caused by *Mycobacterium tuberculosis* (MTB) is considered the most common form of extrapulmonary tuberculosis (TB) [1,5]. Despite the identification of the causative agent, the improvement in diagnostic tools, the production of the BCG vaccine, and the development of antimicrobial regimens since the disease was first described, it remains a major health burden today with significant morbidity and mortality [5]. Here we describe the case of a 24-year-old immigrant male who presented with worsening back pain found to have spinal TB confirmed through PCR testing.

Case Presentation

A 24-year-old Haitian male with no reported past medical history presented to the hospital 5 months after immigrating to the United States with a chief complaint of progressive lower back pain. MRI revealed abnormal signals involving L1-L5 vertebral bodies concerning for osteomyelitis and diskitis. Also visualized, were large bilateral iliopsoas and right posterior paraspinal abscesses. He was then admitted and started on empiric antibiotics. The patient further reported a positive PPD skin test on US arrival, a history of recent unintentional weight loss, subjective fevers, and night sweats. He was taken for vertebral biopsy and abscess drainage, at which time purulent drainage was obtained and sent for culture with AFB stain. No definitive evidence of organisms on AFB stains were noted on the vertebral biopsy and wound cultures showed no significant growth at 5 days. TB QuantiFERON would later result positive, however, and the decision to initiate RIPE was made. Fluid from the psoas abscess was re-collected and sent to the Department of Health for PCR analysis that confirmed the presence of *Mycobacterium tuberculosis*, sensitive to Rifampin. Two weeks after initial collection, acid-fast bacilli were identified in the paraspinal fluid abscess, requiring further speciation. Repeat CT of the abdomen and pelvis showed improvement of initial findings leading to the removal of all percutaneous drains. The patient was successfully discharged after clinical improvement.

Imaging



Figure 1

Figure 2



Figure 3

Figure 1: MRI of the lumbar spine demonstrating enhancing L1-L5 vertebra

Figure 2: MRI demonstrating L4-L5 endplate erosions with a prevertebral epidural abscess

Figure 3: MRI Coronal demonstrating enhancing L1-L5 lumbar vertebrae with adjacent bilateral psoas fluid collections

Discussion

Spinal TB is always secondary and occurs through hematogenous dissemination from a primary site [3,4,5]. Patients with less severe disease may complain of progressive back pain and weakness while patients with complicated spinal TB may exhibit spinal deformity associated with neurological deficits [1,6]. Given symptoms are nonspecific, the greatest challenge in the diagnosis of skeletal TB is considering the diagnosis itself. Growth in culture specimens is considered the most confirmatory diagnostic test, however, this method carries a low sensitivity. Unlike pulmonary TB, extrapulmonary TB sites have a lower number of bacilli, making diagnosis from microscopy even more difficult. PCR is now being utilized in the diagnosis of extrapulmonary TB and in contrast to culture, only requires small amounts of bacilli and is able to provide rapid diagnosis. [6]. In our case, a PCR analysis of the patient's tissue sample promptly confirmed the presence of *Mycobacterium tuberculosis* when vertebral biopsy yielded negative results.

Conclusion

Spinal TB is believed to be the most dangerous form of extrapulmonary TB that can lead to bone destruction, and deformity [6]. It is however a difficult diagnosis to make, as such practitioners should maintain a high index of suspicion and use other diagnostic modalities when conventional tools do not yield results. In our case, PCR analysis of the patient's tissue sample promptly confirmed the presence of TB when tissue cultures still had no growth.

References

1. Kartika Peranginangin P D, Ferriastuti W. Pott's disease with extensive cold abscess in the abdominal cavity which was misinterpreted as malignancy. *Radiol Case Rep.* 2022 Mar 3;17(5):1502-1505. doi: 10.1016/j.radcr.2022.01.070. PMID: 35265249; PMCID: PMC8898755.
2. Viswanathan VK, Subramanian S. Pott Disease. [Updated 2023 Aug 8]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK538331/>
3. Ansari S, Amanullah MF, Ahmad K, Rauniyar RK. Pott's Spine: Diagnostic Imaging Modalities and Technology Advancements. *N Am J Med Sci.* 2013 Jul;5(7):404-11. doi: 10.4103/1947-2714.115775. PMID: 24020048; PMCID: PMC3759066.
4. Garg RK, Somvanshi DS. Spinal tuberculosis: a review. *J Spinal Cord Med.* 2011;34(5):440-54. doi: 10.1179/2045772311Y.0000000023. PMID: 22118251; PMCID: PMC3184481.
5. Rajasekaran S, Soundararajan DCR, Shetty AP, Kanna RM. Spinal Tuberculosis: Current Concepts. *Global Spine J.* 2018 Dec;8(4 Suppl):96S-108S. doi: 10.1177/2192568218769053. Epub 2018 Dec 13. PMID: 30574444; PMCID: PMC6295815.
6. Rima Patel, Vedavyas Gannamani, Emily Shay, David Alcid, "Spinal Tuberculosis and Cold Abscess without Known Primary Disease: Case Report and Review of the Literature". *Case Reports in Infectious Diseases*, vol. 2016, Article ID 1780153, 4 pages, 2016. <https://doi.org/10.1155/2016/1780153>